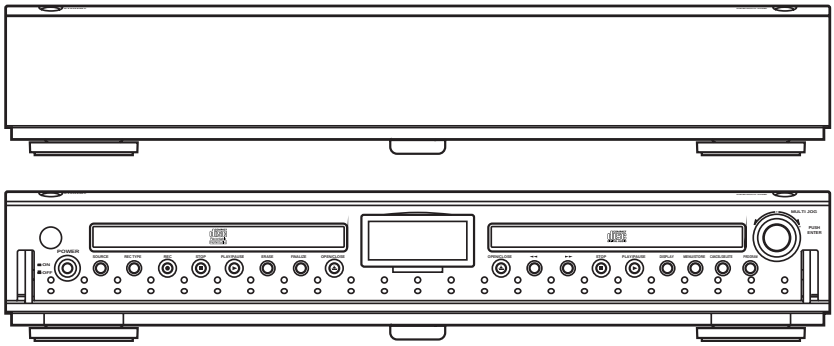
Service Manual

DR2100/N1S, /C1S

CD Recorder



COMPACT disc DIGITAL AUDIO Recordable ReWritable

REMARK : This service manual explains them by extracting specifications designed for the model DR2100 only. The explanation for CD-R module “MAR775” (Loader : CDL4009’ + CD-R Main board) is not mentioned on this seevice manual.
The CD-R module information is described in the service manual of CD-R modules <MAR770/MAR775>.

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MAR1250 (CD MODULE)

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Please use this service manual with referring to the user guide (D.F.U) without fail.

marantz®

DR2100

399K855010 AO
3120 785 22510
First Issue:2001.03

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Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

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3. Description of parts
4. Model number for which part is required
5. Way of shipment
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SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard No. 1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. Servicing the DR2100

1.1 INTRODUCTION:

The DR2100 is the consumer version of a CD recorder, this means that the SCMS (Serial Copy Management System) is included. The DR2100 can only record on the Audio CDRs (Consumer Use).
The DR2100 is suitable for recording and playback of CD-RW discs (CD-Re Writable disc).

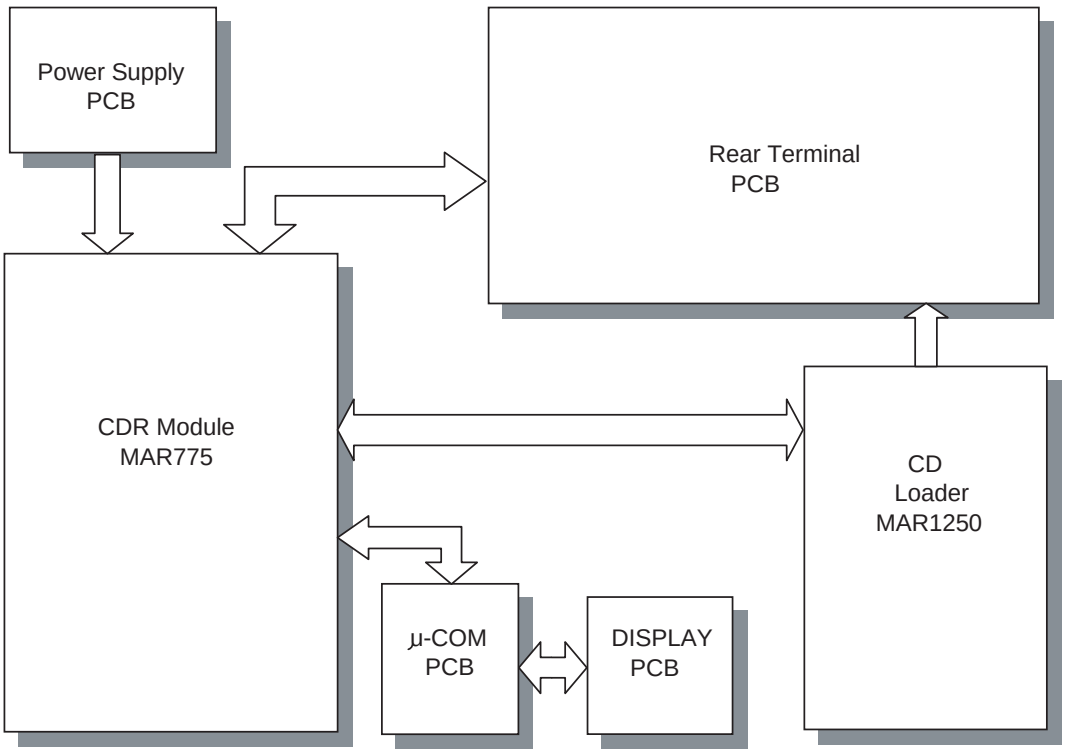
Playback & Recording and Disc

Disc / Player/Recorder	CD	CDR				CD-RW				SCMS
		Consumer Disc		Professional Disc		Consumer Disc		Professional Disc		
		Finalized	non Finalized	Finalized	non Finalized	Finalized	non Finalized	Finalized	non Finalized	
Audio CD Player Current products Ex:CD-17	**P**	**P**	no	**P**	no	no	no	no	no	-
Audio CD Player CD-RW playback Ex:CD-17MK II	**P**	**P**	no	**P**	no	**P**	no	**P**	no	-
CD-RW Recorder For Professional Ex:CDR630/640	**P**	**P**	**P/R**	**P**	**P/R**	**P/R**	**P/R**	**P/R**	**P/R**	no
CD-RW Recorder For Consumer Ex:DR2100	**P**	**P**	**P/R**	**P**	**P**	**P/R**	**P/R**	**P**	**P**	**YES**

Consumer : For Digital Audio
Professional : For General use (Including PC)
P : Playback
R : Recording

1.2 OPENING THE PRODUCT:

The product can be opened by removing the top cover (6 screws). Once the product is opened one can have access to the several PCB's and the main module.



Below the several PCB's and it function and service policy will be discussed:

1.2.1 CDR loader (CDR main module CDL4009 or MAR775):

This complete CDR loader is considered as not repairable in the field. therefore this module will be repaired centrally. A module exchange procedure will be set up for this purpose. The module can be removed from the product by removing 4 screws and the transformer and loosing the connectors.

This module is the complete CD recorder, it contains the following parts:

CD Mechanism (CDM4009'). Underneath this mechanism a PCB is mounted which is adjusted to the mechanism (laser current settings are stored in EEPROM).

Loader Assy. This mechanical assy takes care for the tray control.

Main PCB. This PCB takes care that the (analog or digital) signal to be recorded is converted into a suitable signal which can be recorded on the disc.

Digital signals with an other sampling frequency then 44.1kHz will be converted in the sample rate converter (DASP) to 44.1kHz.

Analog signals will be first converted into a digital converter by the AD converter.

This PCB also takes care that the signal from the CD (playback) is converted into a suitable digital signal (or analog via the DA converter).

The main microprocessor controls the several functions of this PCB.

1.2.2 Power Supply PCB.

This PCB contains the Power SW, which is jointed the Power bottom on the front panel. This PCB consists of power supply part. The power suppluy part delivers the several voltages for the diffrent PCB in the DR2100. On this power supply one fuse (primary side) is mounted on this PCB. All parts are available as spare parts.

1.2.3 Terminal PCB.

This PCB coutaius input and output terminals. All parts are available as spare parts.

1.2.4 Display Board.

This PCB contains the Display, which informs the user about the status of the recording/playback process and it also takes care for scanning the keys on the front panel. The information from the keys is fed via a I^2C connection to the main microprocessor on the CDR loader module. Information which needs to be displayed is also fed via this I^2C line from the main microprocessor on the CDR loader module to the display controller.
The parts for this PCB are available as service parts so this PCB can be repairable up to component level.

IMPORTANT

In case of replace the CD-R module "MAR775", the initialization is necessary.
Please initialize the CD-R module with following orders.

1. Press the POWER button (POWER ON) while depressing FINALIZE button and REC TYPE button together.
2. LCD Display shows;
   WAIT → PGM PROTOCOL → PGM PORT END
3. Press the POWER button (POWER OFF).

Then the CD-R module set up to DR2100 own status.

2 TECHNICAL SPECIFICATIONS

GENERAL

System ..... Compact disc digital audio
Number of channels ..... 2 (stereo)
Applicable discs ..... CD, CD-R (digital audio), CD-RW (digital audio)
Power Requirement ..... AC 110 V - 240V 50 / 60 Hz
Power Consumption ..... 20 W
Operating Temperature . ..... 5 - 35 °C
Dimension (MAX)
Width ..... 420 mm
Height ..... 76 mm
Depth ..... 309 mm
Weight ..... 4.4 kg

AUDIO

Frequency Response ..... 20 Hz - 20 kHz
Playback S/N ..... 100 dB
Playback Dynamic Range ..... 96 dB
Playback Total Harmonic Distortion ..... 0.003 %
Recording S/N ..... 90 dB
Recording Dynamic Range ..... 92 dB
Recording Total Harmonic Distortion ..... 0.006 %
Digital Coaxial Output ..... 0.5 V (p-p) / 75 ohms
Analog Output Voltage ..... 2 V RMS
Digital Optical Output ..... - 20 dBm

Recording values for line input
Digital Coaxial Input (automatic sample rate conversion) ..... 11 - 56 kHz
Digital Optical Input (automatic sample rate conversion) ..... 11 - 56 kHz
Analog Input ..... 600 mVrms / 50 kohms

Specifications subject to change without prior notice.

3. WARNINGS

ESD

(GB) WARNING
All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION
Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

(D) WARNUNG
Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß sie im Reparaturfall über ein Puls-armband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING
Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat	large	1200x650x1.25mm	4822 466 10953
	small	600x650x1.25mm	4822 466 10958
anti-static wristband			4822 395 10223
connection box (3 press stud connections, 1M)			4822 320 11307
extendible cable (2m, 2M , to connect wristband to connection box)			4822 320 11305
connecting cable (3m, 2M , to connect table mat to connection box)			4822 320 11306
earth cable (1M , to connect any product to mat or to connection box)			4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)			4822 310 10671
wristband tester			4822 344 13999

SAFETY

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)
Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvor-schriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Original-ersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkeliijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

U : VERSION

N : VERSION

(GB) **DANGER**: Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

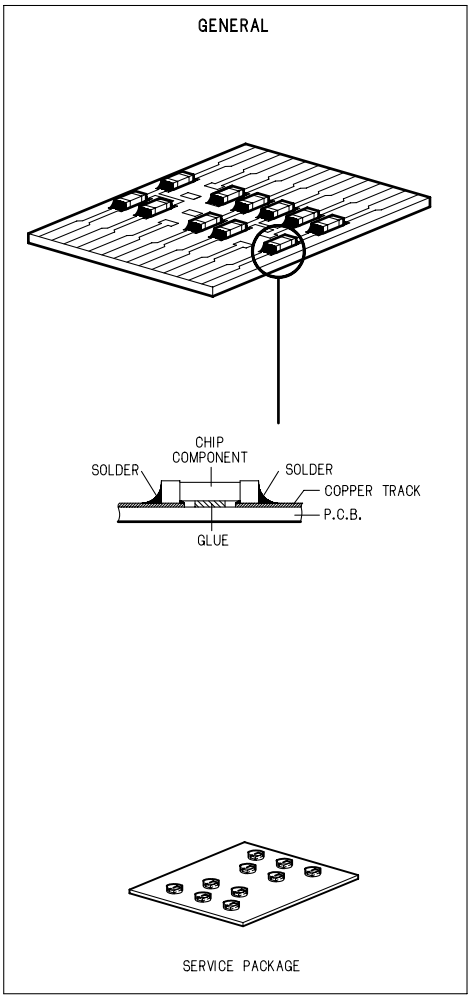
(DK) Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

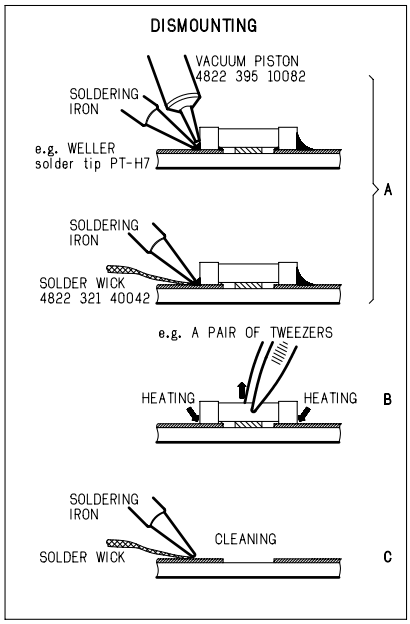
(SF) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

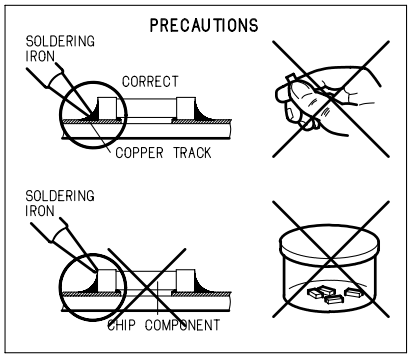
(GB)
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

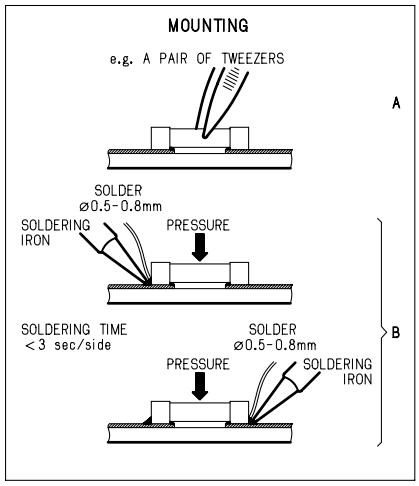
(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

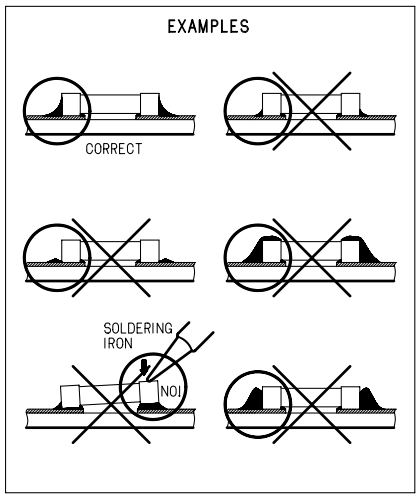
4. SERVICE HINTS AND TOOLS









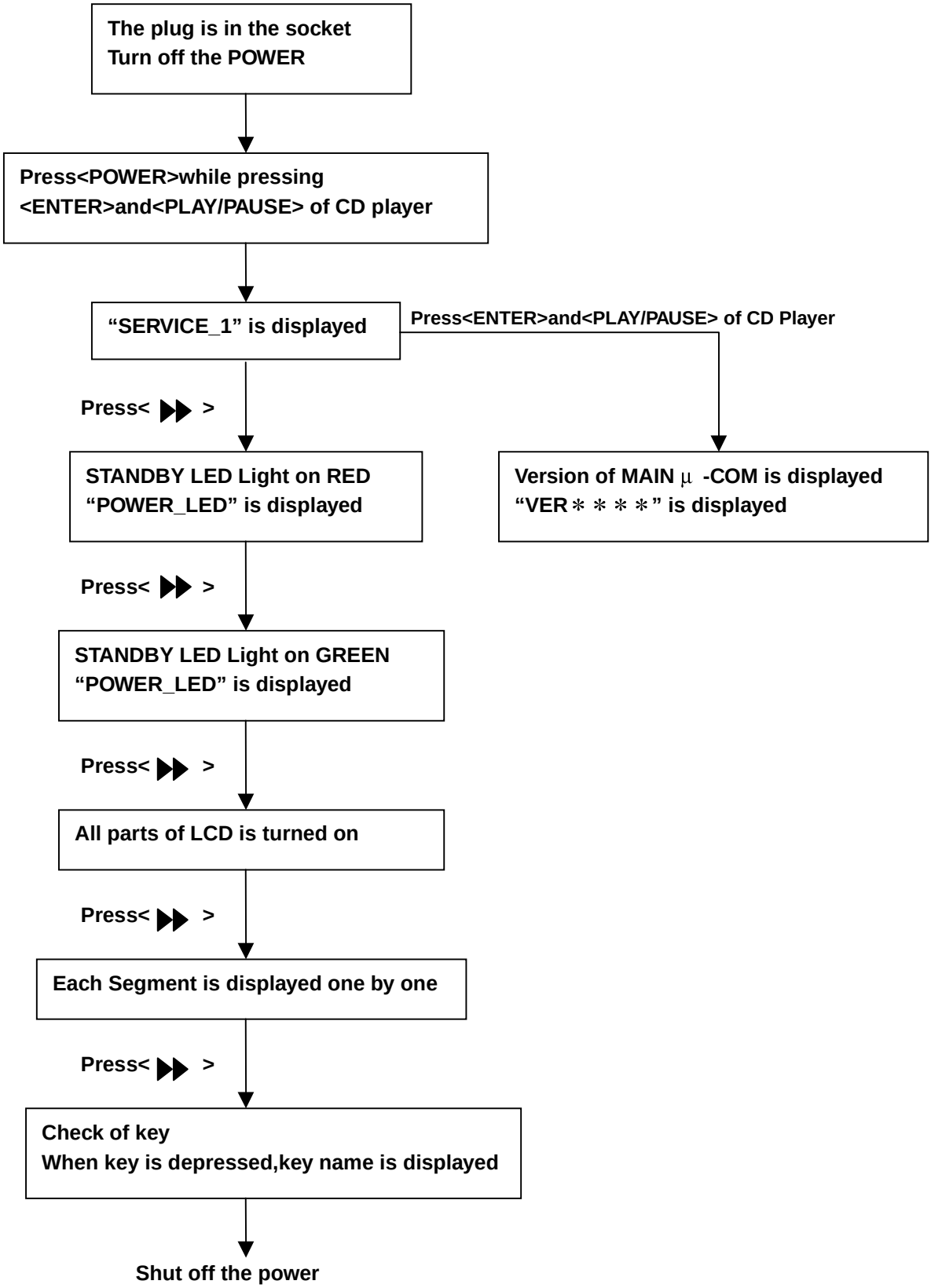


SERVICE TOOLS

The tools listed below are standard test tools that can be used for repairing and testing Marantz CD Players & Recorders.

Audio signals disc	4822 397 30184
Disc without errors (SBC444)+	
Disc with DO errors, black spots and fingerprints (SBC444A)	4822 397 30245
Disc (65 min 1kHz) without no pause	4822 397 30155
Max. diameter disc (58.0 mm)	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204
Hexagon socket screw button (No. 1.5)	

5. SERVICE MODE



6. DIAGNOSTICS SOFTWARE

6.1 Dealer mode

The purpose of the dealer mode is to prevent people taking out the CD inside the player at exhibitions, showrooms etc.. This mode disables the open/close function of the player.
The dealer mode can be switched on and off pressing keys [OPEN/CLOSE] and [STOP] of the CDR player simultaneously while switching on the unit. The dealer mode is stored in the flash memory and can only be changed by executing the above actions.

6.2 Dealer diagnostics

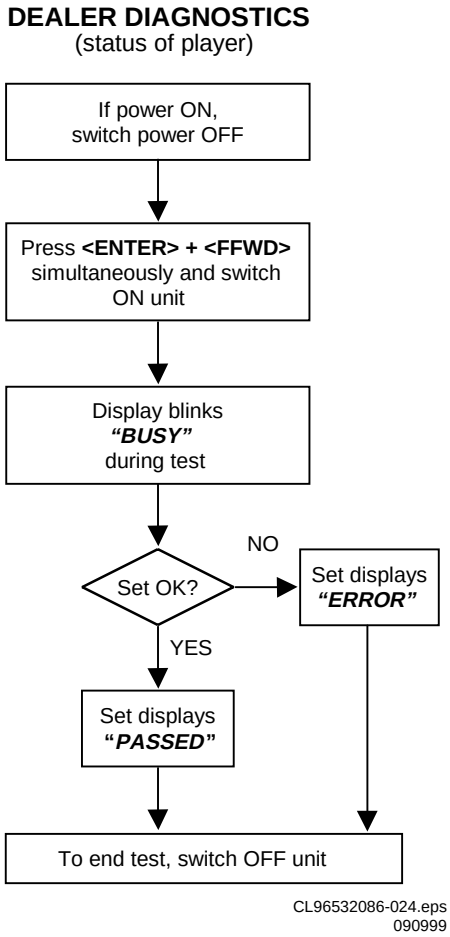


Figure 6-1

6.2.1 Description

The intention of the dealer diagnostics is to give an indication of the CDR player status. An inexperienced, even non-technical dealer will/can perform the test. Tests are executed automatically without need for external tools or disassembly of the unit. This test checks the CDR main board using the same tests as the electrical service diagnostics program. Only the result of the test, "PASSED" or "ERROR", will be shown on the display. Pressing keys [F FWD] and [REWIND] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.2.2 Requirements to perform the test

Working keyboard to start up the test.
Working local display to check the output messages.

6.3 Electrical service diagnostics

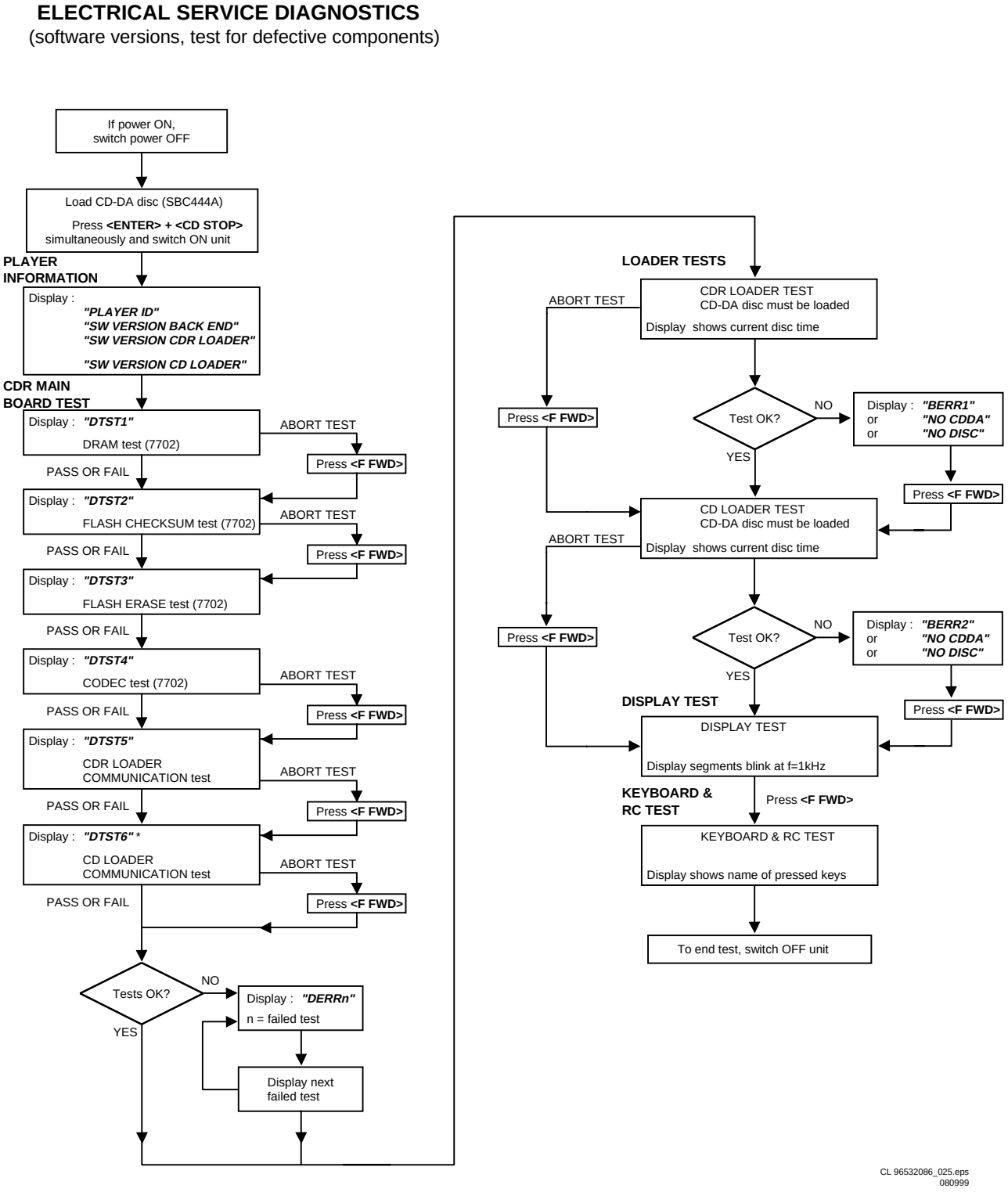


Figure 6-2

6.3.1 Description

The intention of the electrical service diagnostics is to show the software versions present in the player and to direct the dealer towards defective internal units. The units are : the CDR main board, the CDR loader, the CD loader in case of a DR6050 and the keyboard/display board. A sequence of tests is executed automatically. Some of the tests can be aborted or skipped without the result being taken into account. External tools or disassembly of the unit is not necessary to get the diagnostic information. Pressing keys [ENTER] and [CD STOP]. simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.3.2 Requirements to perform the test

Working keyboard to start up the test.
Working local display to check the output messages.
A CD-DA disc with a minimum of 3 tracks in all trays to perform the disc test.

6.3.3 Description of the tests

Player information
In this part of the test the following important information can be checked without removing the cover :
Recorder ID.
SW-version back end of player.
SW-version CDR loader.
SW-version CD loader.

CDR main board test
[F FWD] key. The message "DERRn" will be displayed with n indicating the faulty test number.
If one of the tests is aborted with the [F FWD] key, no error message will be displayed for this test. The flash data erase test ("DTST3") can not be aborted !
The CDR main board test consists out of :

DRAM test
Display : "DTST1". The DRAM used for buffer management is tested by writing, reading and verifying test patterns.

Flash checksum test
Display : "DTST2". This test checks the checksum of the player's SW stored in the flash.

Flash data erase
Display : "DTST3". During this test, all temporary information (CDtxt) in the flash is erased.

CODEC (ADC/DAC) test
Display : "DTST4". This test checks the CODEC IC by writing, reading and verifying test patterns.

CDR communication test
Display : "DTST5". The communication between the host processor (DASP) and the CDR loader via the DSA-R-bus is tested.

CD communication test
Display : "DTST6"). The communication between the host processor (DASP) and the CD loader is tested.

Loader tests
These tests determine if the CDR loader and the CD loader in case of a DR2100 work correctly. A CD-DA disc with a minimum of 3 tracks needs to be inserted in both loaders. A disc test is executed to check focus control, disc motor control, radial control and jump grooves control. The disc test is performed by audio play-back of 5 seconds at the beginning, middle and end of the disc.

CDR loader test
During the test, the current disc time is shown. In case of an error the message "BERR1" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

CD loader test
During the test, the current disc time is shown.
In case of an error the message "BERR2" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

Display test
All segments will blink at a frequency of 1 Hz. Pressing the [F FWD] key will start the next test because the user has to check for himself if all segments work properly.

Keyboard and remote control tests
The test will give the user the ability to test every key without executing the function assigned to it. Therefore, the user needs to press every key on the keyboard and the remote control. The display will show the name of the key being pressed. Pressing more than one key at once will give an unpredictable result except for the service combinations : [ENTER] + [DISPLAY], [ENTER] + [CD STOP], [ENTER] + [F FWD], [ENTER] + [MENU], [ENTER] + [CANCEL], [ENTER] + [CD PLAY].

6.4 Mechanical service diagnostics

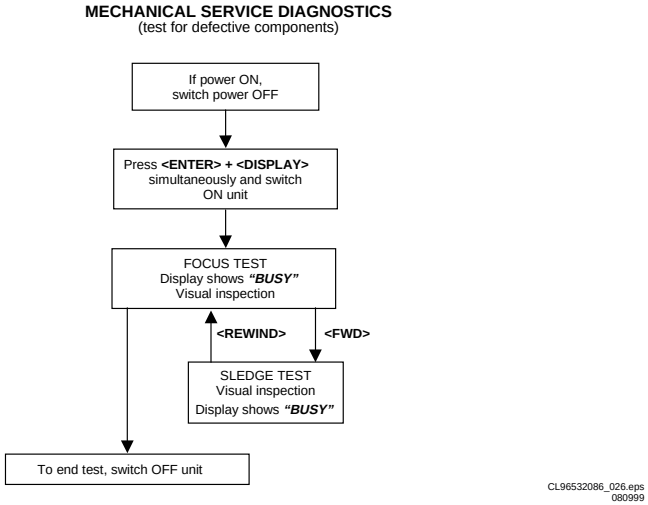


Figure 6-3

6.4.1 Description

No external tools are required to perform this test. The cover needs to be removed because the user has to check the movements of the tray, focus and sledge visually. Pressing keys [ENTER] and [DISPLAY] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test. In case of a DR2100, one can check the CD loader mechanics in the same way by pressing the above key combination on the CD player keys.

6.4.2 Requirements to perform the test

Working keyboard to cycle through the tests and to start up the test.
Working local display to check the output messages.

6.4.3 Description of the tests

Focus control test
The focussing lens is continuously moving up and down. The display reads "BUSY".

Sledge control test
After pressing [F FWD] the sledge continuously moves up and down. Pressing [REWIND] stops the sledge at the position it is in and the focus control test resumes. The display reads "BUSY".

6.5 DC-erase service mode

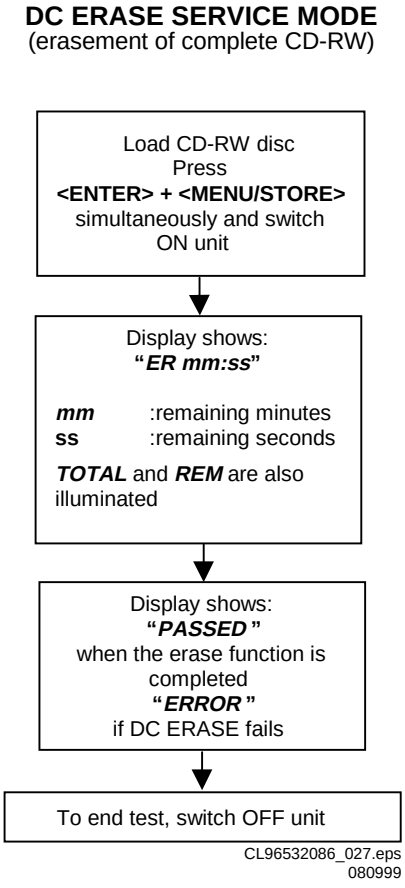


Figure 6-4

6.5.1 Description

This test is initiated by pressing [ENTER] and [MENU/STORE] simultaneously while switching on the unit. The player will erase a complete CD-RW disc (including PMA and ATIP lead out area) at speed N=2. The display shows the countdown of the remaining time required for the operation to complete. The format is "ER mm:ss", where "mm" are the remaining minutes and "ss" the remaining seconds. After completion the message "PASSED" is shown, and the player has to be switched off and on again to start up in normal operating mode. Switching off the unit before completion of the test, leaves the disc in an unpredictable state. In such case only a complete DC-erase procedure can recover the CD-RW disc.

6.5.2 Requirements to perform the test

Functional CDR player.
A CD-RW audio disc must be present in the tray.

7. Faultfinding trees

7.1 CDR-Module (MAR775)

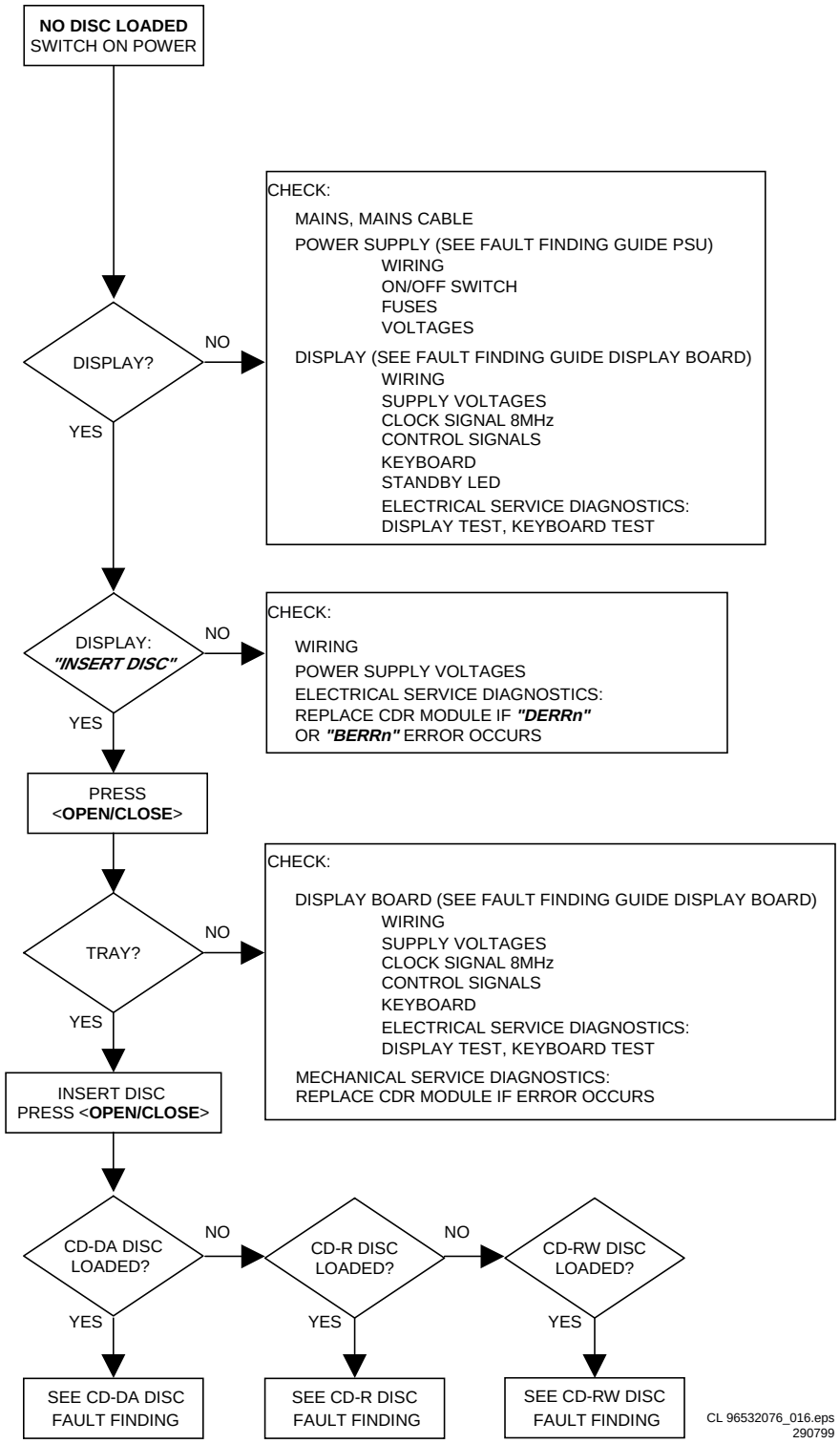


Figure 7-1

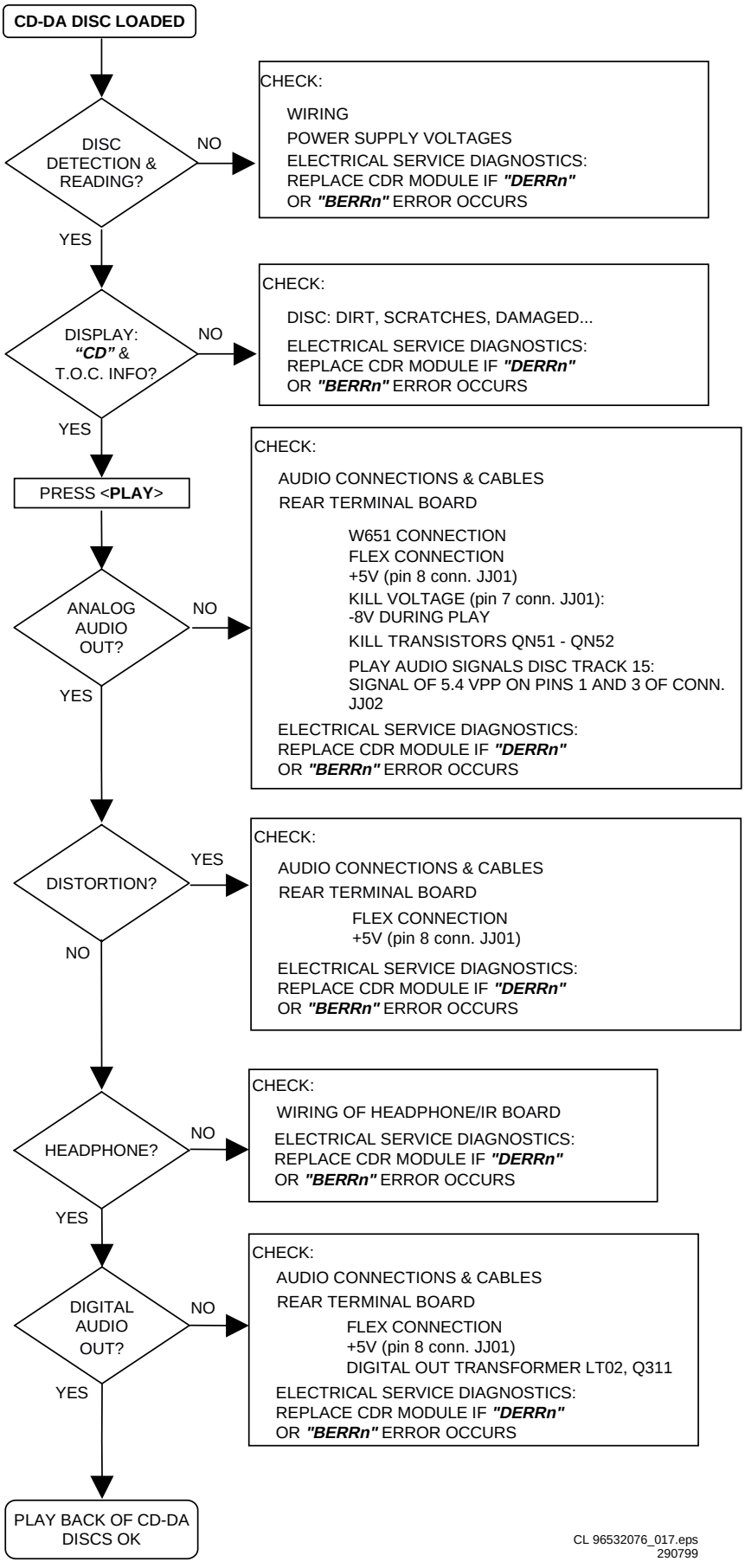

CD-DA DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
WIRING
POWER SUPPLY VOLTAGES
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
DISC: DIRT, SCRATCHES, DAMAGED...
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
PRESS <PLAY>
ANALOG AUDIO OUT?
NO
CHECK:
AUDIO CONNECTIONS & CABLES
REAR TERMINAL BOARD
W651 CONNECTION
FLEX CONNECTION
+5V (pin 8 conn. JJ01)
KILL VOLTAGE (pin 7 conn. JJ01):
-8V DURING PLAY
KILL TRANSISTORS QN51 - QN52
PLAY AUDIO SIGNALS DISC TRACK 15:
SIGNAL OF 5.4 VPP ON PINS 1 AND 3 OF CONN. JJ02
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
DISTORTION?
YES
CHECK:
AUDIO CONNECTIONS & CABLES
REAR TERMINAL BOARD
FLEX CONNECTION
+5V (pin 8 conn. JJ01)
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
NO
HEADPHONE?
NO
CHECK:
WIRING OF HEADPHONE/IR BOARD
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
DIGITAL AUDIO OUT?
NO
CHECK:
AUDIO CONNECTIONS & CABLES
REAR TERMINAL BOARD
FLEX CONNECTION
+5V (pin 8 conn. JJ01)
DIGITAL OUT TRANSFORMER LT02, Q311
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
PLAY BACK OF CD-DA DISCS OK
CL 96532076_017.eps
290799

Figure 7-2

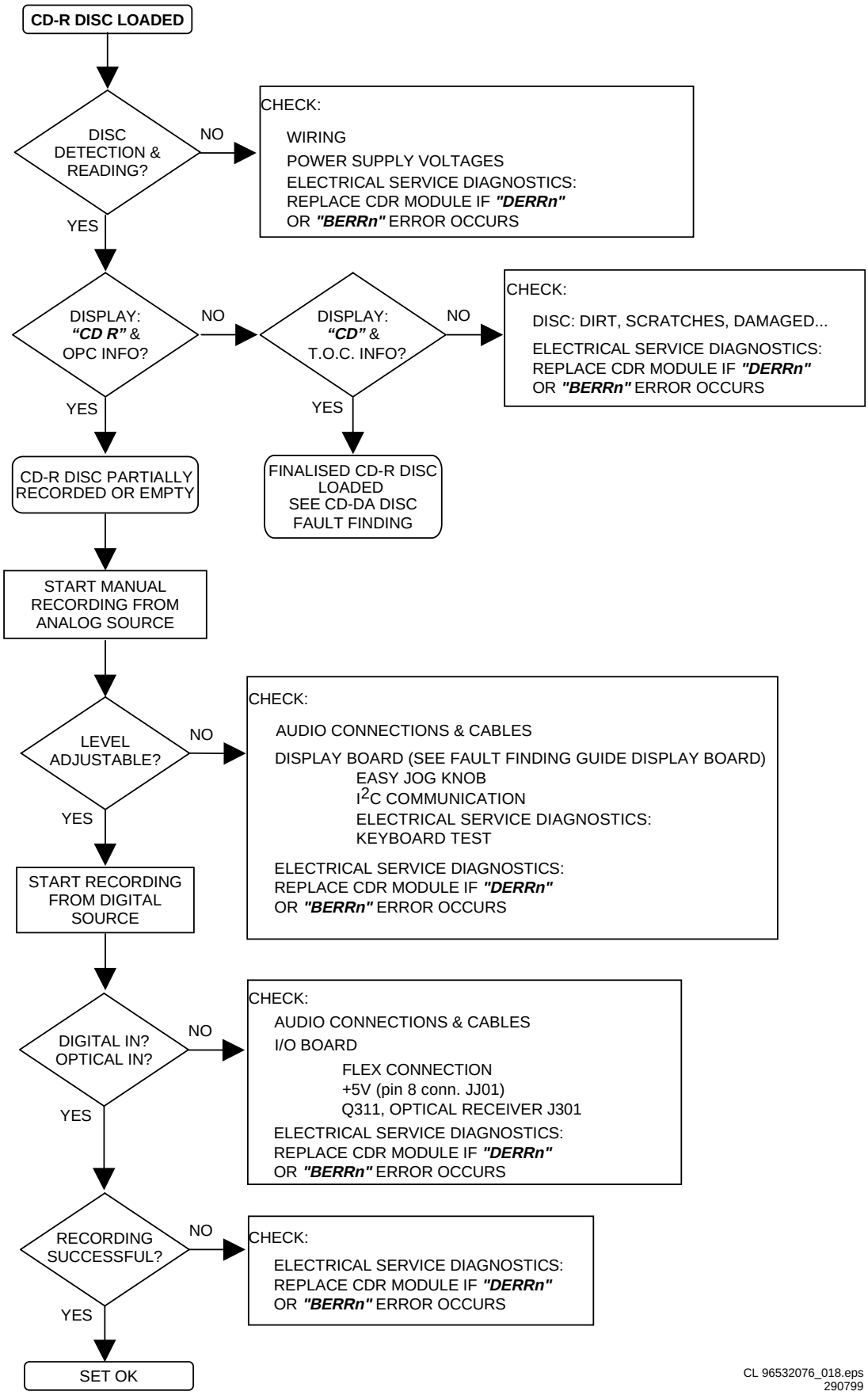

CD-R DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
WIRING
POWER SUPPLY VOLTAGES
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD R" & OPC INFO?
NO
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
DISC: DIRT, SCRATCHES, DAMAGED...
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
YES
CD-R DISC PARTIALLY RECORDED OR EMPTY
FINALISED CD-R DISC LOADED
SEE CD-DA DISC FAULT FINDING
START MANUAL RECORDING FROM ANALOG SOURCE
LEVEL ADJUSTABLE?
NO
CHECK:
AUDIO CONNECTIONS & CABLES
DISPLAY BOARD (SEE FAULT FINDING GUIDE DISPLAY BOARD)
EASY JOG KNOB
I2C COMMUNICATION
ELECTRICAL SERVICE DIAGNOSTICS:
KEYBOARD TEST
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
START RECORDING FROM DIGITAL SOURCE
DIGITAL IN? OPTICAL IN?
NO
CHECK:
AUDIO CONNECTIONS & CABLES
I/O BOARD
FLEX CONNECTION
+5V (pin 8 conn. JJ01)
Q311, OPTICAL RECEIVER J301
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
RECORDING SUCCESSFUL?
NO
CHECK:
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
SET OK
CL 96532076_018.eps
290799

Figure 7-3

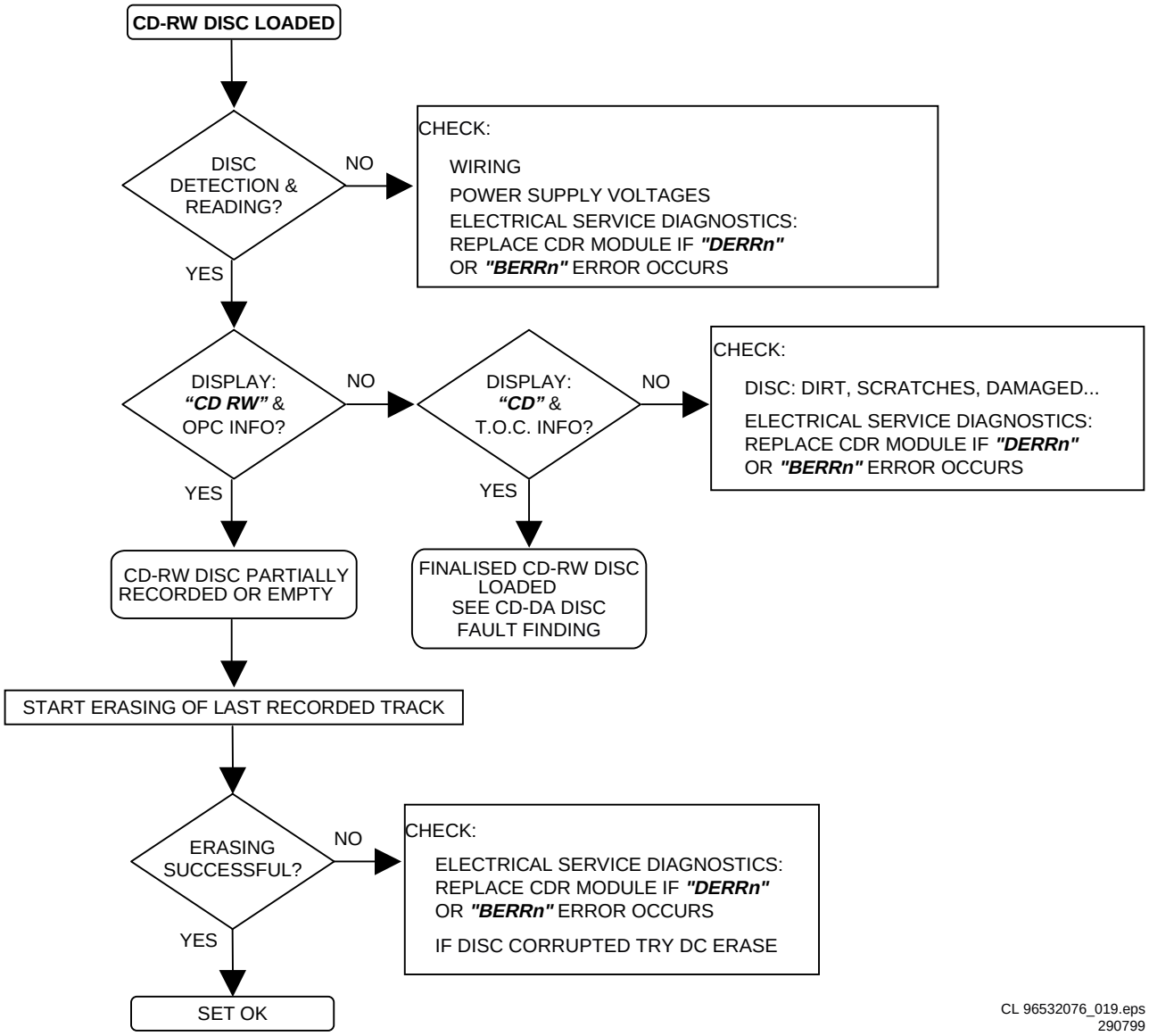

CD-RW DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
WIRING
POWER SUPPLY VOLTAGES
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD RW" & OPC INFO?
NO
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
DISC: DIRT, SCRATCHES, DAMAGED...
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
YES
YES
CD-RW DISC PARTIALLY RECORDED OR EMPTY
FINALISED CD-RW DISC LOADED
SEE CD-DA DISC FAULT FINDING
START ERASING OF LAST RECORDED TRACK
ERASING SUCCESSFUL?
NO
CHECK:
ELECTRICAL SERVICE DIAGNOSTICS:
REPLACE CDR MODULE IF "DERRn"
OR "BERRn" ERROR OCCURS
IF DISC CORRUPTED TRY DC ERASE
YES
SET OK
CL 96532076_019.eps
290799

Figure 7-4

7.2 CD Module

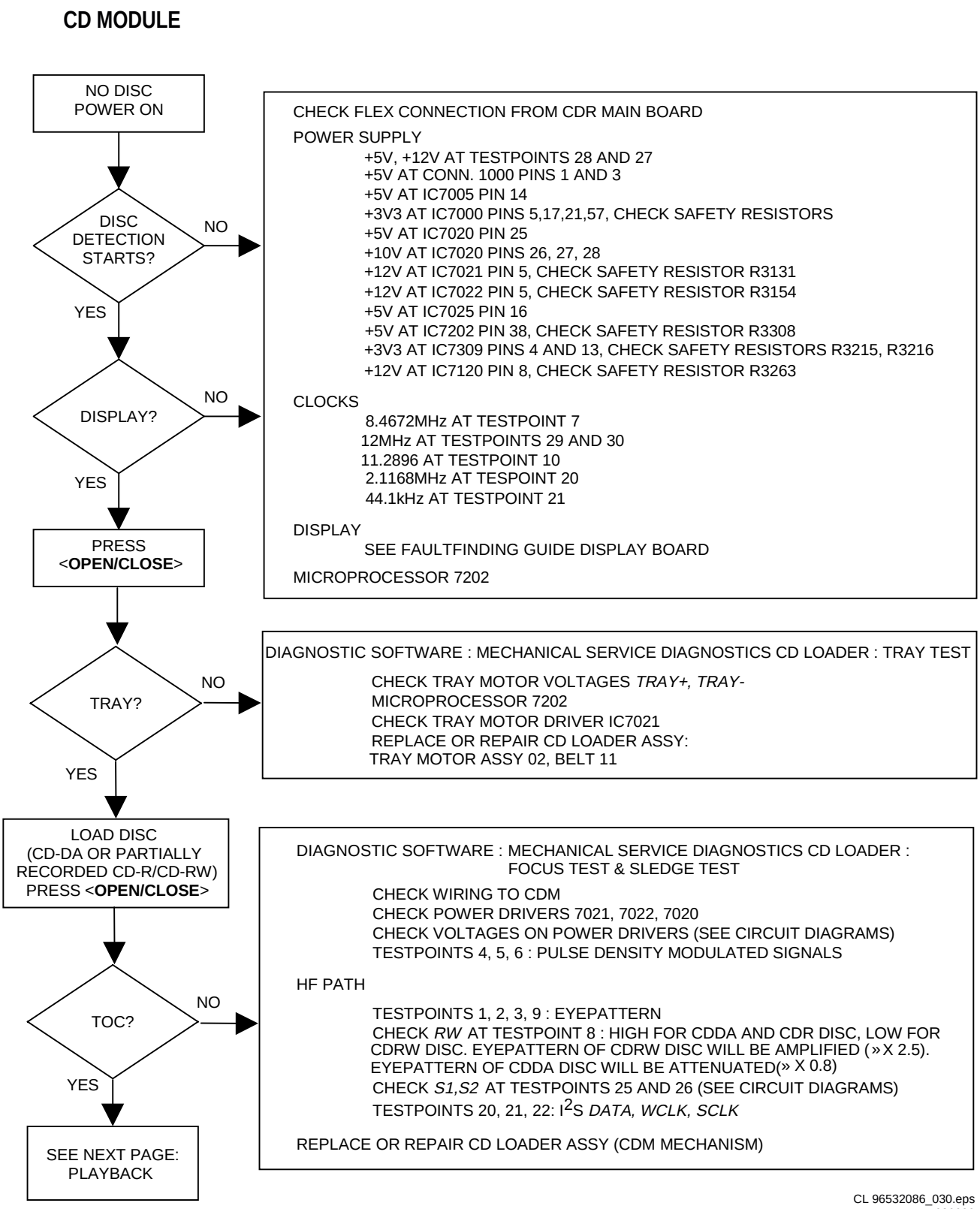

CD MODULE
NO DISC POWER ON
DISC DETECTION STARTS?
NO
YES
DISPLAY?
NO
YES
PRESS <OPEN/CLOSE>
TRAY?
NO
YES
LOAD DISC (CD-DA OR PARTIALLY RECORDED CD-R/CD-RW) PRESS <OPEN/CLOSE>
TOC?
NO
YES
SEE NEXT PAGE: PLAYBACK
CHECK FLEX CONNECTION FROM CDR MAIN BOARD
POWER SUPPLY
+5V, +12V AT TESTPOINTS 28 AND 27
+5V AT CONN. 1000 PINS 1 AND 3
+5V AT IC7005 PIN 14
+3V3 AT IC7000 PINS 5,17,21,57, CHECK SAFETY RESISTORS
+5V AT IC7020 PIN 25
+10V AT IC7020 PINS 26, 27, 28
+12V AT IC7021 PIN 5, CHECK SAFETY RESISTOR R3131
+12V AT IC7022 PIN 5, CHECK SAFETY RESISTOR R3154
+5V AT IC7025 PIN 16
+5V AT IC7202 PIN 38, CHECK SAFETY RESISTOR R3308
+3V3 AT IC7309 PINS 4 AND 13, CHECK SAFETY RESISTORS R3215, R3216
+12V AT IC7120 PIN 8, CHECK SAFETY RESISTOR R3263
CLOCKS
8.4672MHz AT TESTPOINT 7
12MHz AT TESTPOINTS 29 AND 30
11.2896 AT TESTPOINT 10
2.1168MHz AT TESPOINT 20
44.1kHz AT TESTPOINT 21
DISPLAY
SEE FAULTFINDING GUIDE DISPLAY BOARD
MICROPROCESSOR 7202
DIAGNOSTIC SOFTWARE : MECHANICAL SERVICE DIAGNOSTICS CD LOADER : TRAY TEST
CHECK TRAY MOTOR VOLTAGES TRAY+, TRAY-
MICROPROCESSOR 7202
CHECK TRAY MOTOR DRIVER IC7021
REPLACE OR REPAIR CD LOADER ASSY:
TRAY MOTOR ASSY 02, BELT 11
DIAGNOSTIC SOFTWARE : MECHANICAL SERVICE DIAGNOSTICS CD LOADER : FOCUS TEST & SLEDGE TEST
CHECK WIRING TO CDM
CHECK POWER DRIVERS 7021, 7022, 7020
CHECK VOLTAGES ON POWER DRIVERS (SEE CIRCUIT DIAGRAMS)
TESTPOINTS 4, 5, 6 : PULSE DENSITY MODULATED SIGNALS
HF PATH
TESTPOINTS 1, 2, 3, 9 : EYEPATTERN
CHECK RW AT TESTPOINT 8 : HIGH FOR CDDA AND CDR DISC, LOW FOR CDRW DISC. EYEPATTERN OF CDRW DISC WILL BE AMPLIFIED (» X 2.5).
EYEPATTERN OF CDDA DISC WILL BE ATTENUATED(» X 0.8)
CHECK S1,S2 AT TESTPOINTS 25 AND 26 (SEE CIRCUIT DIAGRAMS)
TESTPOINTS 20, 21, 22: I2S DATA, WCLK, SCLK
REPLACE OR REPAIR CD LOADER ASSY (CDM MECHANISM)
CL 96532086_030.eps
080999

Figure 7-5

CD MODULE PLAYBACK

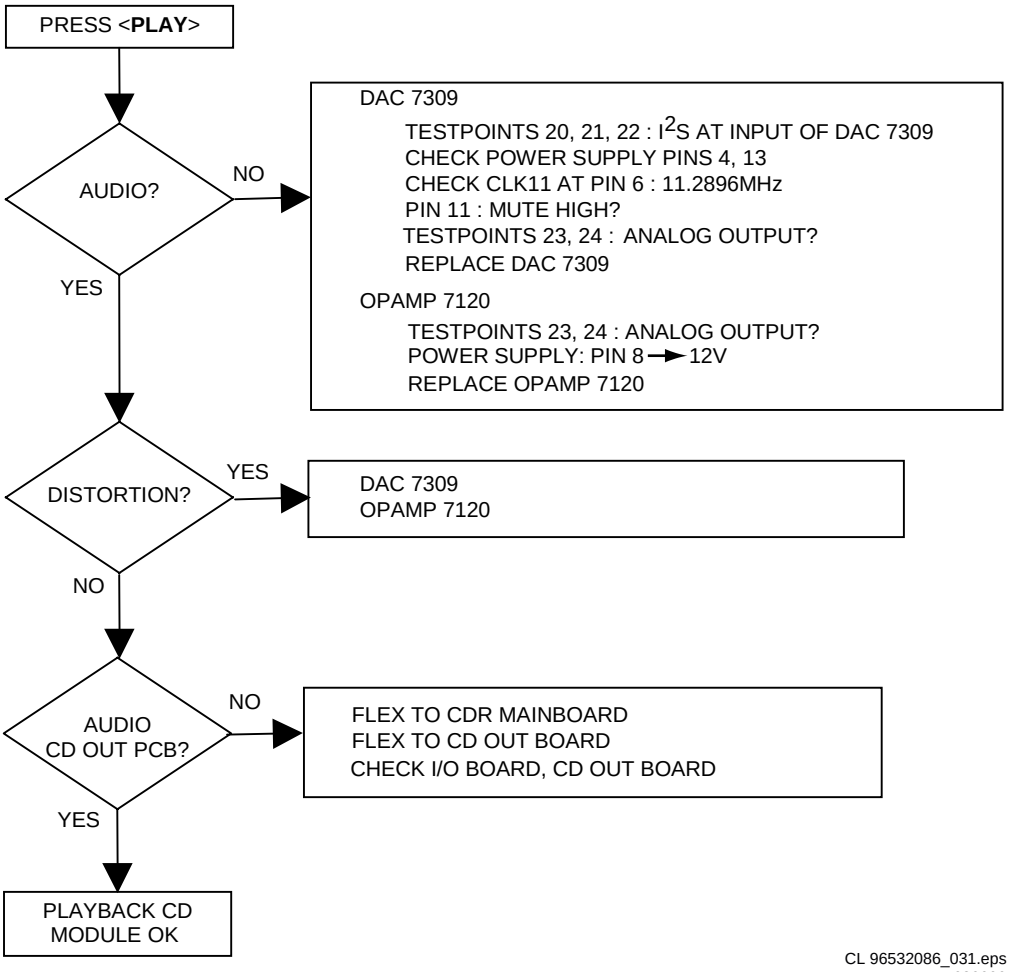


Figure 7-6

8. Faultfinding Guide

8.1 Display Board

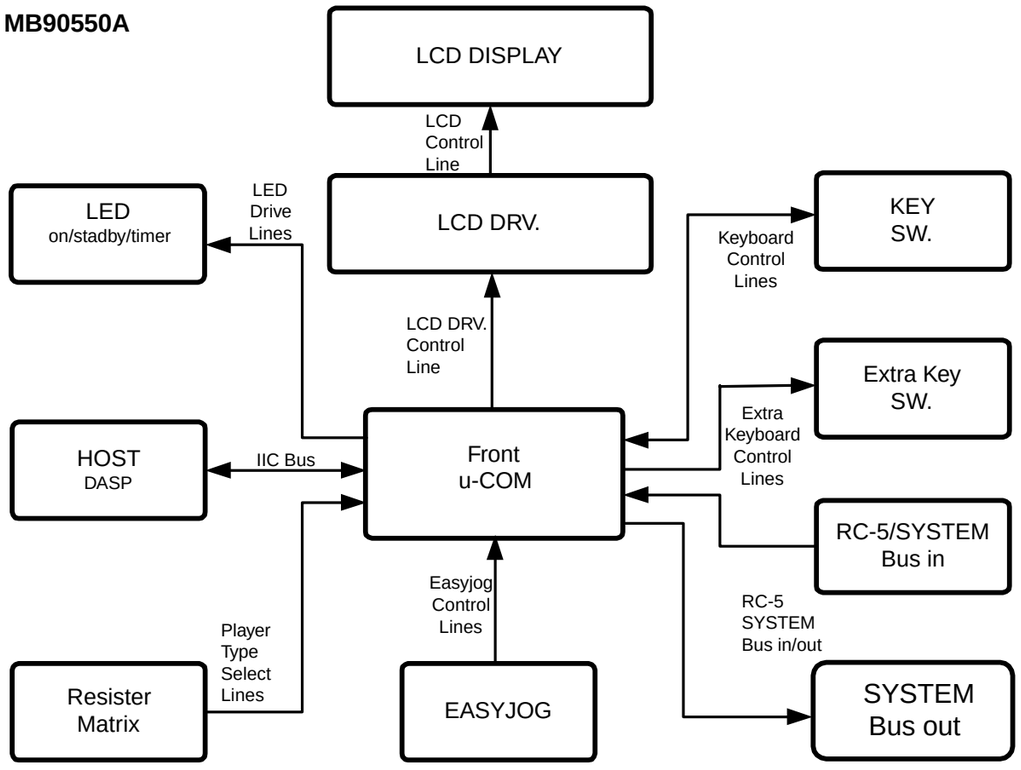
8.1.1 Description of display board

General description

The display board has three major parts : the LCD(Liguid Crystal Display),the display controller and the keyboard. The display controller is controlled by the DASP master processor on the CDR main board. The communication protocol used is I2C. So all the information between DASP and display controller goes via the SDA or I2C DATA and SCL or I2C CLK lines. Communication is always initiated by the DASP on the CDR main board. Unlike the previous generations of CDR players, the interrupt generated by the display controller at key-press or reception of remote control is not used. Instead, the DASP polls the display controller for these events.

Block Diagram around µ-Com

MB90550A



Key Input

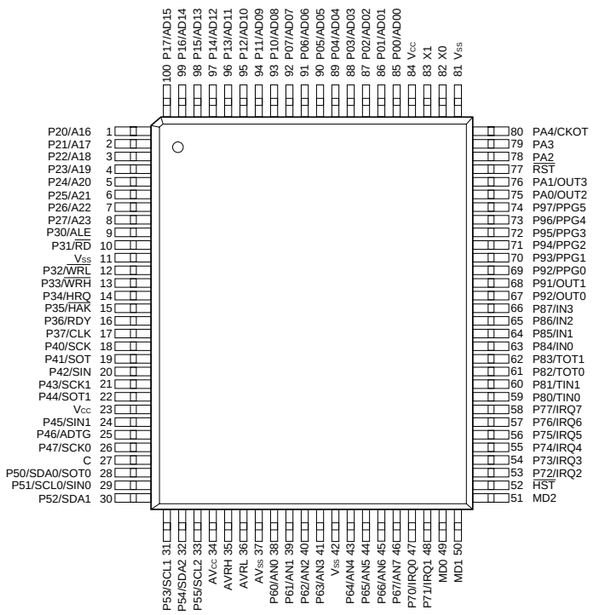
Each key is detected by changing the voltage level shown below.

	3.5V≦～<4.5V	2.5V≦ ～ <3.5V	1.5V≦ ～ <2.5V	0.5V≦ ～ <1.5V	～ <0.5V
KEY0 (P38)	PROGRAM	CANCEL/DELITE	MENU/STORE	DISPLAY	DOOR OPEN
KEY1(P39)	CD PLAY/PAUSE	CD STOP (CD SELECT)	CD/CDR FF	CD/CDR REW	CD TRAY OPEN/CLOSE
KEY2(P40)	SOURCE	REC TYPE	REC	CDR STOP (CDR SELECT)	STAND BY
KEY3(P41)	CDR PLAY/PAUSE	ERASE	FINALISE	CDR TRAY OPEN/CLOSE	ENTER

If this recorder is STANDBY state, the power will be recovered when the key is pressed.
Stop Key can be work to select either CDR or CD.

Figure 8-1

Pin Configuration



(FPT-100P-M06)

µ-COM DESCRIPTION

Pin	PORT	SIGNAL	I/O	DESCRIPTION	
1	P20/A16	LCD_DIM	O	LCD back light of DIMMER Control	See DIMMER Control
2	P21/A17	LCD_BL	O	LCD backlight ON/OFF	See DIMMER Control
3	P22/A18	POWER_LED	O	Power ON LED	Active H
4	P23/A19	STB_LED	O	Standby LED	Active H
5	P24/A20	SYS_SW	I	When Bus Switch	SYSTEM bus = H
6	P25/A21	SYS_MUTE	O	SYSTEM LINE OUT OF MUTE	Active H
7	P26/A22	STB_MUTE	O	Power On < - > MUTE when STANDBY is activate	Active H
8	P27/A23	CDR/Through	O	To switch AUDIO OUT	DR; H, Through; L
9	P30/ALE	N.C.	I		
10	P31/RD	N.C.	I		
11	VSS	GND			
12	P32/WRL	N.C.	I		
13	P33/WRH	N.C.	I		
14	P34/HRQ	N.C	I		
15	P35/HAK	N.C.	I		
16	P36/RDY	POWER_ON	O	Power Control	Power ON; H
17	P37/CLK	N.C.	I		
18	P40/SCK	TCK.	I/O	To connect Flash Writer	
19	P41/SOT	SYS_OUT TRXD	O	SYSTEM Control bus OUTPUT To connect Flash Writer	
20	P42/SIN	SYS_IN TTXD	I	SYSTEM Control bus or IR/RC5 Input To connect Flash Writer	
21	P43/SCK1	N.C.	I		
22	P44/SOT1	N.C.	I		
23	VCC	+5STB	--	VCC	
24	P45/SIN1	N.C.	I		
25	P46/ADTG	N.C.	I		
26	P47/SCK0	N.C.	I		
27	C	C			
28	P50/SDA0/SOT0	ROM_SDA	I/O	SERIAL DATA to EEPROM	
29	P51/SOL0/SIN0	ROM_SCL	O	SERIAL DATA to EEPROM	
30	P52/SDA1	IIC_DATA	I/O	DATA Communication to CDR Module IIC Interface	
31	P53/SCL1	IIC_CLK	I/O	CLK Communication to CDR Module IIC Interface	
32	P54/SDA2	N.C.	I		
33	P55/SCL2	N.C.	I		
34	AVCC	+5STB	--	VCC	
35	AVRH	+5STB	--	VCC	
36	AVRL	GND			
37	AVSS	GND			
38	P60/AN0	KEY_IN_0	I	KEY_0 INPUT	
39	P61/AN1	KEY_IN_1	I	KEY_1 INPUT	
40	P62/AN2	KEY_IN_2	I	KEY_2 INPUT	
41	P63/AN3	KEY_IN_3	I	KEY_3 INPUT	
42	VSS	GND			
43	P64/AN4	N.C.	I		
44	P65/AN5	N.C.	I		
45	P66/AN6	N.C.	I		
46	P67/AN7	N.C.	I		
47	P70/IRQ0	LT1	I	RESET signal from CDR	Active H
48	P71/IRQ1	N.C.	I		
49	MD0	TMODE	I	To changing CPU Mode	PULL UP
50	MD1	MD1	I	To changing CPU Mode	PULL UP
51	MD2	TAUX3	I	To changing CPU Mode	PULL DOWN
52	HST	HST	I	STANDBY input signal by hardware	PULL UP
53	P72/IRQ2	D_MOTOR_REV	O	Door REV Motor ON	Active H
54	P73/IRQ3	D_MOTOR_FWD	O	Door FWD Motor ON	Active H
55	P74/IRQ4	D_OPEN_SW	I	Door Open	Active L
56	P75/IRQ5	D_CLOSE_SW	I	Door Close	Active L
57	P76/IRQ6	JOG_A	I	JOG A	
58	P77/IRQ7	JOG_B	I	JOG B	
59	P80/TIN0	INT.	I	INTERRUPT signal from CDR Module	
60	P81/TIN1	N.C.	I		
61	P82/TOT0	N.C.	I		
62	P83/TOT1	N.C.	I		
63	P84/IN0	IR_IN	I	Control bus INPUT either IR/RC5 or SYSTEM	
64	P85/IN1	IN_SW	I	CDR, CD trey hardware SW.	Active : H / Passive : L
65	P86/IN2	CDR_IN	I	CDR Trey IN	Active L
66	P87/IN3	CD_IN	I	CD Trey IN	Active L
67	P90/OUT0	N.C.	I		
68	P91/OUT1	N.C.	I		
69	P92/PPG0	N.C.	I		
70	P93/PPG1	N.C.	I		
71	P94/PPG2	N.C.	I		
72	P95/PPG3	N.C.	I		
73	P96/PPG4	N.C.	I		
74	P97/PPG5	N.C.	I		
75	PA0/OUT2	N.C.	I		
76	PA1/OUT3	N.C.	I		
77	RST	CPU_RST	I	CPU RESET signal	Low (PULL UP)
78	PA2	N.C.	I		
79	PA3	N.C.	I		
80	PA4/CKOT	N.C.	I		
81	VSS	GND			
82	X0	8MHz X'tal			
83	X1	8MHz X'tal			
84	VCC	+5STB	--	VCC	
85	P00/AD00	TAUX	I	To Flash Writer	
86	P01/AD01	---	I	To change CPU mode	PULL UP
87	P02/AD02	RST	O	LCD Driver RESET	Active L
88	P03/AD03	LCD_/WR	O	WR OUTPUT to LCD Driver	Active L
89	P04/AD04	LCD_/RD	O	RD OUTPUT to LCD Driver	Active L
90	P05/AD05	A0	O	LCD Driver mode	See NJU6450 Data Sheet
91	P06/AD06	N.C.	I		
92	P07/AD07	N.C.	I		
93	P10/AD08	D0	I/O	To LCD Driver	
94	P11/AD09	D1	I/O	To LCD Driver	
95	P12/AD10	D2	I/O	To LCD Driver	
96	P13/AD11	D3	I/O	To LCD Driver	
97	P14/AD12	D4	I/O	To LCD Driver	Active L
98	P15/AD13	D5	I/O	To LCD Driver	Active L
99	P16/AD14	D6	I/O	To LCD Driver	Active L
100	P17/AD15	D7	I/O	To LCD Driver	See NJU6450 Data Sheet

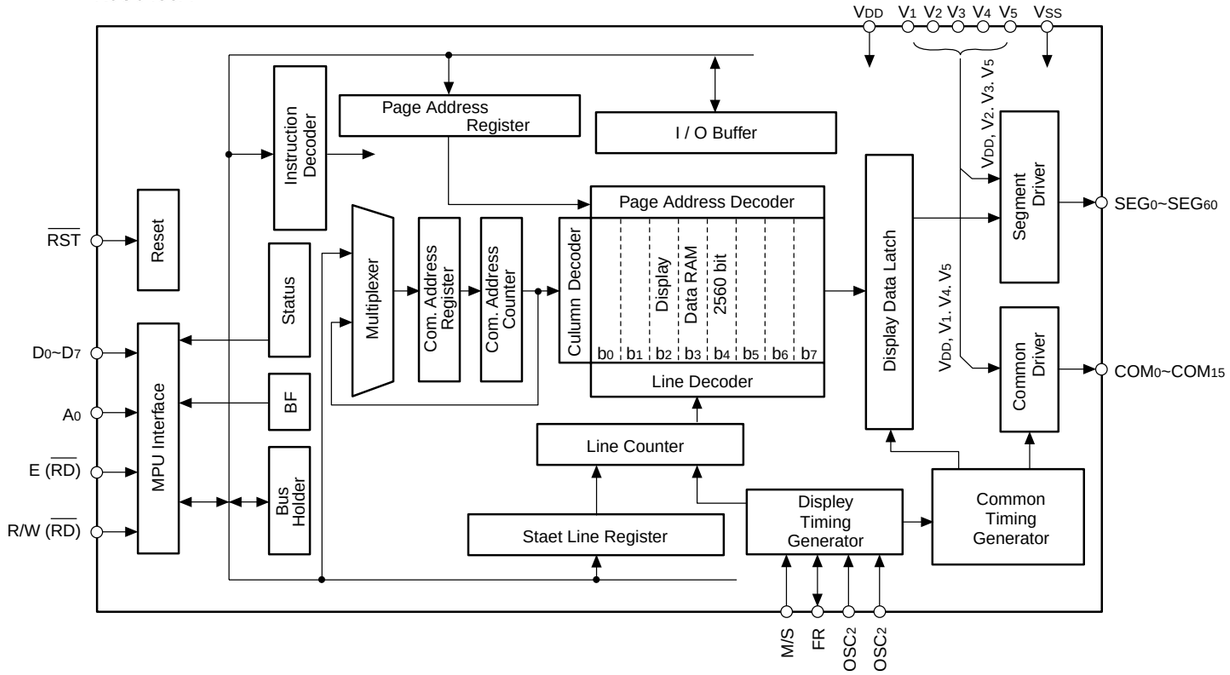
Dimmer Control

The µ-controller, MB90F553A/MB90553A adjust the brightness of LCD back light by receiving signal from IR or SYSTEM BUS.

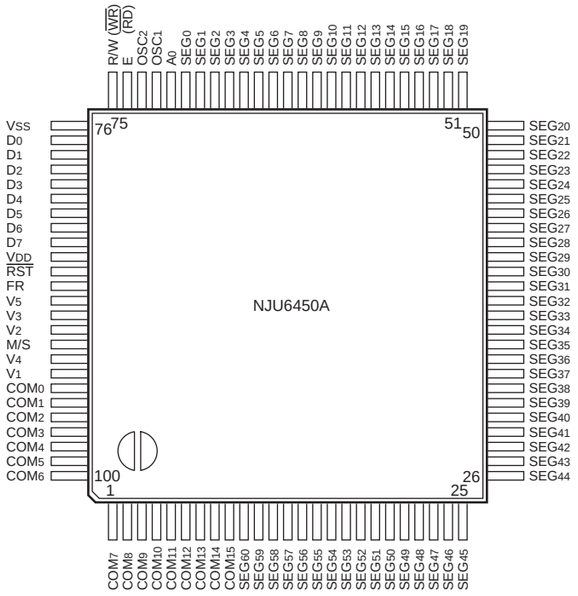
Mode	LCD_DIM (1Pin)	LCD_BL (2Pin)
Backlight OFF	Low	Low
Backlight ON	Low	High
Dimmer ON	High	Low

Block Diagram

NJU6450A



Pin Configuration


R/W (WR) (RD)
E
OSC2
OSC1
A0
SEG0 SEG1 SEG2 SEG3 SEG4 SEG5 SEG6 SEG7 SEG8 SEG9 SEG10 SEG11 SEG12 SEG13 SEG14 SEG15 SEG16 SEG17 SEG18 SEG19
VSS D0 D1 D2 D3 D4 D5 D6 D7 VDD RST FR V5 V3 V2 M/S V4 V1 COM0 COM1 COM2 COM3 COM4 COM5 COM6
SEG20 SEG21 SEG22 SEG23 SEG24 SEG25 SEG26 SEG27 SEG28 SEG29 SEG30 SEG31 SEG32 SEG33 SEG34 SEG35 SEG36 SEG37 SEG38 SEG39 SEG40 SEG41 SEG42 SEG43 SEG44
COM7 COM8 COM9 COM10 COM11 COM12 COM13 COM14 COM15 SEG60 SEG59 SEG58 SEG57 SEG56 SEG55 SEG54 SEG53 SEG52 SEG51 SEG50 SEG49 SEG48 SEG47 SEG46 SEG45
76 75
51 50
100 1
26 25
NJU6450A

Chip Size 4860um x 4160um(Chip Center X=0um,Y=0um)

No.	Terminal Name	X=(um)	Y=(um)
1	COM5	-2130	-1865
2	COM6	-1970	-1865
3	COM7	-1810	-1865
4	COM8	-1650	-1865
5	COM9	-1490	-1865
6	COM10	-1330	-1865
7	COM11	-1190	-1865
8	COM12	-1050	-1865
9	COM13	- 910	-1865
10	COM14	- 770	-1865
11	COM15	- 630	-1865
12	SEG60	- 490	-1865
13	SEG59	- 350	-1865
14	SEG58	- 210	-1865
15	SEG57	- 70	-1865
16	SEG56	70	-1865
17	SEG55	210	-1865
18	SEG54	350	-1865
19	SEG53	490	-1865
20	SEG52	630	-1865
21	SEG51	770	-1865
22	SEG50	910	-1865
23	SEG49	1050	-1865
24	SEG48	1190	-1865
25	SEG47	1330	-1865
26	SEG46	1490	-1865
27	SEG45	1650	-1865
28	SEG44	1810	-1865
29	SEG43	1970	-1865
30	SEG42	2130	-1865
31	SEG41	2213	-1354
32	SEG40	2213	-1214
33	SEG39	2213	-1074
34	SEG38	2213	- 934
35	SEG37	2213	- 794
36	SEG36	2213	- 654
37	SEG35	2213	- 514
38	SEG34	2213	- 374
39	SEG33	2213	- 234
40	SEG32	2213	- 94
41	SEG31	2213	46
42	SEG30	2213	186
43	SEG29	2213	326
44	SEG28	2213	466
45	SEG27	2213	606
46	SEG26	2213	746
47	SEG25	2213	886
48	SEG24	2213	1026
49	SEG23	2213	1166
50	SEG22	2213	1306

No.	Terminal Name	X=(um)	Y=(um)
51	SEG21	2130	1865
52	SEG20	1970	1865
53	SEG19	1810	1865
54	SEG18	1650	1865
55	SEG17	1490	1865
56	SEG16	1330	1865
57	SEG15	1190	1865
58	SEG14	1050	1865
59	SEG13	910	1865
60	SEG12	770	1865
61	SEG11	630	1865
62	SEG10	490	1865
63	SEG9	350	1865
64	SEG8	210	1865
65	SEG7	70	1865
66	SEG6	- 70	1865
67	SEG5	- 210	1865
68	SEG4	- 350	1865
69	SEG3	- 490	1865
70	SEG2	- 630	1865
71	SEG1	- 770	1865
72	SEG0	- 910	1865
73	A0	-1050	1865
74	OSC1	-1190	1865
75	OSC2	-1330	1865
76	E	-1490	1865
77	R／W	-1650	1865
78	VSS	-1810	1865
79	DB0	-1970	1865
80	DB1	-2130	1865
81	DB2	-2213	1330
82	DB3	-2213	1190
83	DB4	-2213	1050
84	DB5	-2213	910
85	DB6	-2213	770
86	DB7	-2213	630
87	VDD	-2213	490
88	RST	-2213	350
89	FR	-2213	210
90	V5	-2213	70
91	V3	-2213	- 70
92	V2	-2213	- 210
93	M／S	-2213	- 350
94	V4	-2213	- 490
95	V1	-2213	- 630
96	COM0	-2213	- 770
97	COM1	-2213	- 910
98	COM2	-2213	-1050
99	COM3	-2213	-1190
100	COM4	-2213	-1330

* Pad Size 92um x 92um

8.1.2 Test instructions

Clock signal

As clock driver for the display controller, a resonator of 8 MHz (XY01)is used. The signal can be measured at pins 8 and 9 of the display controller : 8 MHz ±5%.

I2C DATA/I2C CLK

These lines connect to the DASP master processor via respectively pin 5 and pin 7 of conn. JU02. When there is no communication, they should have the high level (+5V). The oscillogram below gives an indication of how these signals should look like.

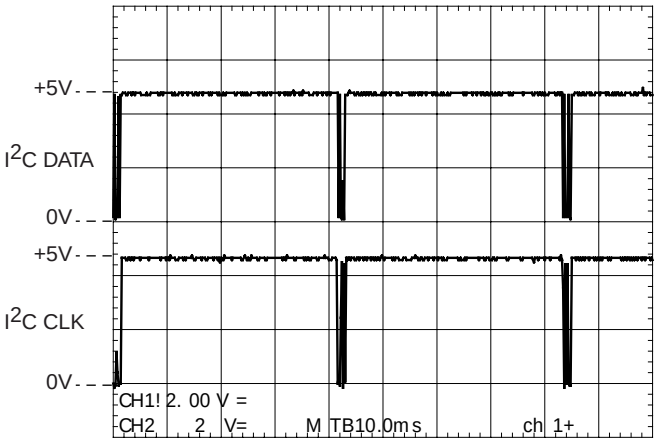


Figure 8-2 'I2C signals'

IR receiver - remote control

In the DR2100 the IR receiver RPM6934 (ZY83, ZY84) is mounted on the display board. In all versions the IR receiver connects to the display controller. The signal coming from the receiver can be checked at pin 3 of conn. JU05. This signal is normally high (+5V). When the remote control is being operated, pulses mixed in with the +5V can be measured. The oscillogram gives an indication of how the signal looks like with the RC being operated.

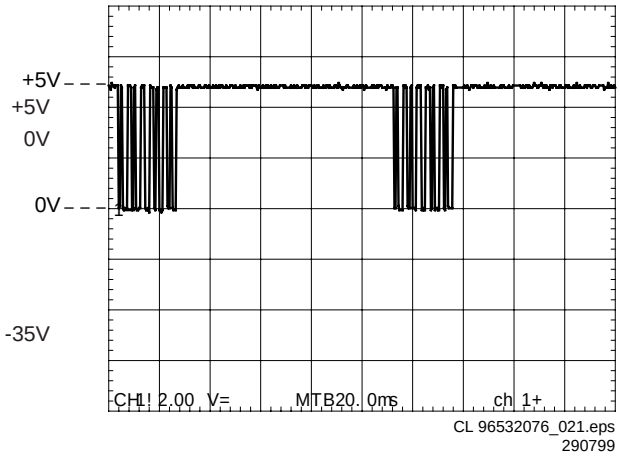


Figure 8-3 'IR receiver signal'

8.1.3 Display board troubleshooting guide

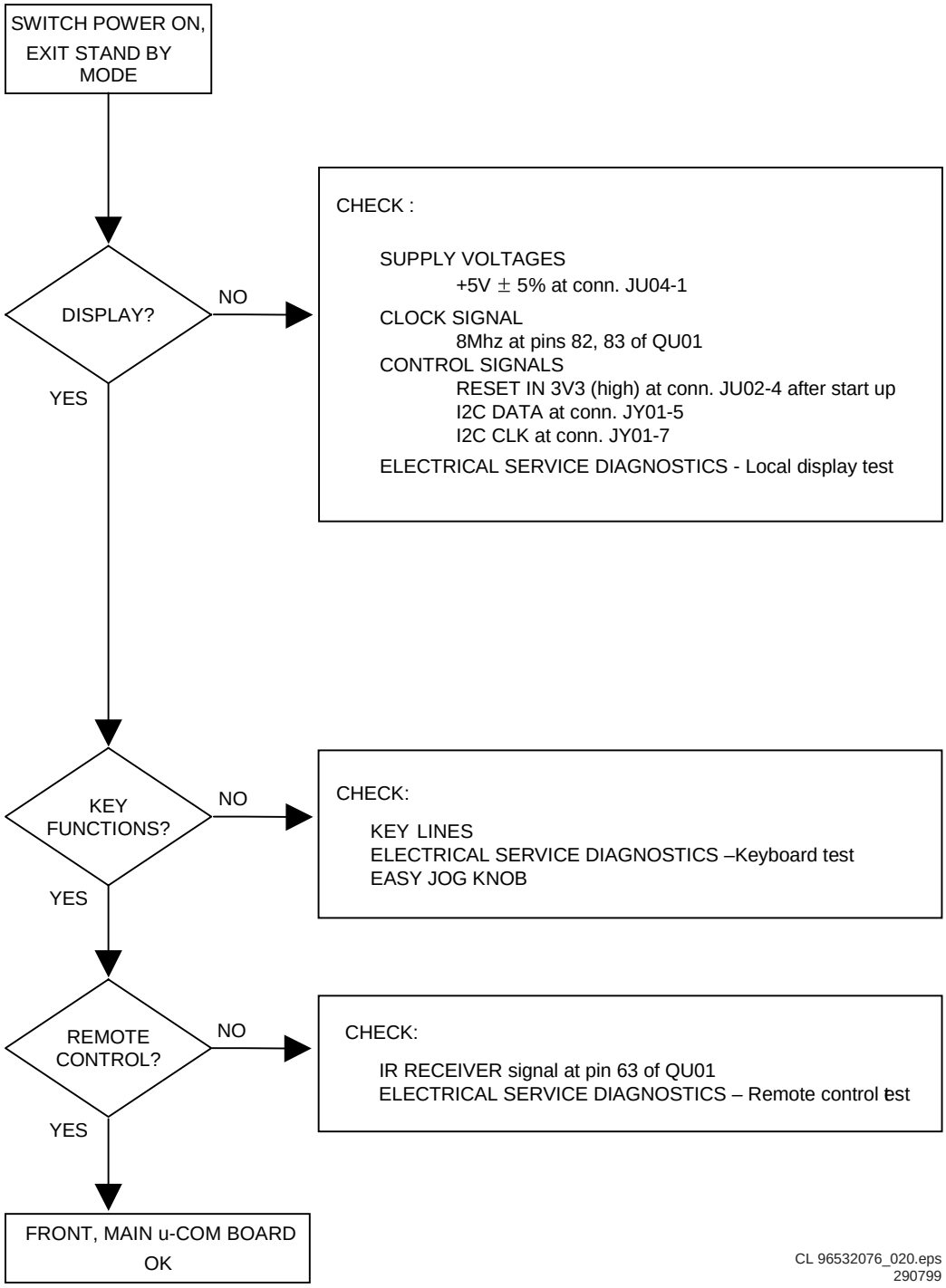


Figure 8-4 Display board troubleshooting'

8.2 Power Supply Unit P816

8.2.1 Troubleshooting P816

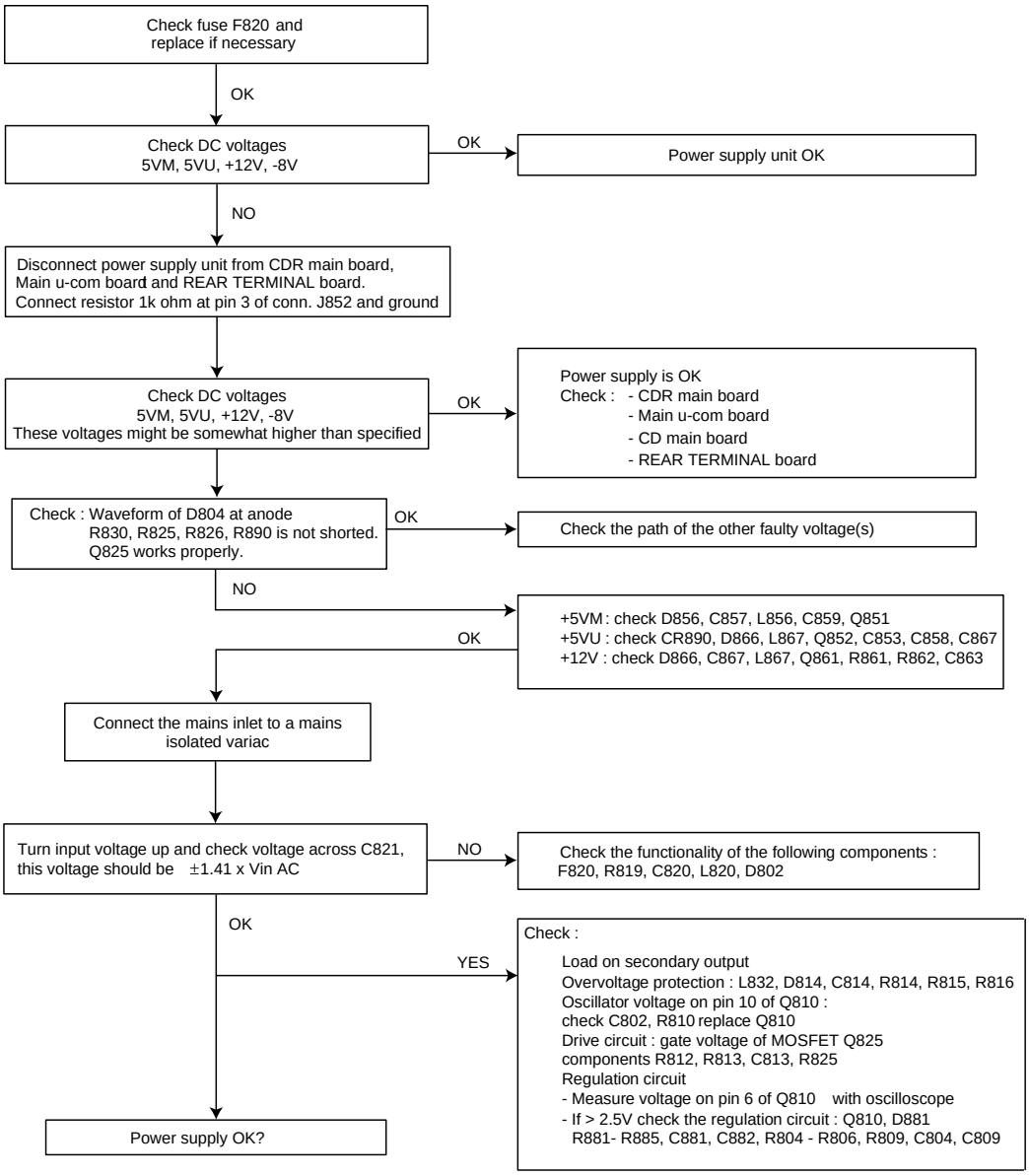

Check fuse F820 and replace if necessary
OK
Check DC voltages 5VM, 5VU, +12V, -8V
OK
Power supply unit OK
NO
Disconnect power supply unit from CDR main board, Main u-com board and REAR TERMINAL board. Connect resistor 1k ohm at pin 3 of conn. J852 and ground
Check DC voltages 5VM, 5VU, +12V, -8V These voltages might be somewhat higher than specified
OK
Power supply is OK
Check : - CDR main board
- Main u-com board
- CD main board
- REAR TERMINAL board
Check : Waveform of D804 at anode R830, R825, R826, R890 is not shorted. Q825 works properly.
OK
Check the path of the other faulty voltage(s)
NO
+5VM : check D856, C857, L856, C859, Q851
+5VU : check CR890, D866, L867, Q852, C853, C858, C867
+12V : check D866, C867, L867, Q861, R861, R862, C863
OK
Connect the mains inlet to a mains isolated variac
Turn input voltage up and check voltage across C821, this voltage should be ±1.41 x Vin AC
NO
Check the functionality of the following components : F820, R819, C820, L820, D802
OK
YES
Check :
Load on secondary output
Overvoltage protection : L832, D814, C814, R814, R815, R816
Oscillator voltage on pin 10 of Q810 :
check C802, R810 replace Q810
Drive circuit : gate voltage of MOSFET Q825
components R812, R813, C813, R825
Regulation circuit
- Measure voltage on pin 6 of Q810 with oscilloscope
- If > 2.5V check the regulation circuit : Q810, D881
R881- R885, C881, C882, R804 - R806, R809, C804, C809
Power supply OK?

Figure 8-5

8.3 CD Main Board

The CD main board is built around the compact disc mechanism MAR1250 and a loader 1250. The CDM delivers diode signals and an unequalised high frequency signal. These signals are necessary inputs for the decoder CD10. Based on these signals the decoder will control the disc. The decoder is able to control the sledge, focus motor, radial motor and turn table. When everything is "locked", the decoder delivers a digital output according to IEC958 standard, subcode to the microprocessor and I2S for reproducing analog audio signals by means of a D/A converter.

The microprocessor controls the CD10 and is slave of the master processor on the CDR main board in the DR2100. Both processors communicate via a DSA connection (data, strobe and acknowledge).

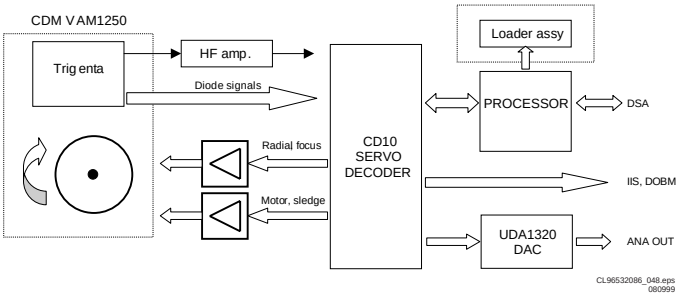


Figure 8-6

8.3.1 Supply Voltages

Description

The CD main board receives +5V and +12V from the CDR main board via respectively pin 16 and pin 15 of connector 1208. The +5V is split up into +5VHF and +5V. The +5VHF is used mainly for the diode currents and the HF-amplifier. The +5V is used for the digital part of the board. On the board a +3V3 is made from the +5V for the decoder CD10 and an A3V3 for the DAC UDA1320. The +12V is split up into A12V for the audio output stage and +12V for the power drivers of the CDM.

Measurements

Connect following supplies to next pins :

+5V + 5% to pin 16 of connector 1208.
+12V + 5% to pin 15 of connector 1208.
Ground reference to pin 17 of connector 1208.

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Check the following voltages :

Point	Voltage
Position 1000 pins 1,3	+5V ± 5%
Position 7000 pins 5,17,21,57	+3.3V ± 5%
Position 7005 pin 14	+5V ± 5%
Position 7020 pin 25	+5V ± 5%
Position 7020 pins 26,27,28	+10 ±10%
Position 7021 pin 5	+12V ±10
Position 7022 pin 5	+12V ±10
Position 7025 pin 16	+5V ± 5%
Position 7202 pin 38	+5V ± 5% (other appl. 3V3 possible)
Position 7309 pins 4,13	+3V3 ± 5%
Position 7120 pin 8	+12V ± 10

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Figure 8-7

8.3.2 Clock Signals

Description

The microprocessor has its own Xtal or resonator of 12MHz. The CD10 needs a clock of 8.4672MHz + 100ppm. This speed also relates to the disc speed. To avoid locking problems between the two drives in the CDR775, both drives run on the same clock. Therefore the CD main board gets the clock for the decoder from the CDR main board via pin 2 of connector 1208. The DAC needs a system clock to drive its internal digital filters and to clock the I2S signals from the decoder. In our case this is 11.2896MHz (CL11) generated by the CD10.

Measurements

Connect the power supply as described above in "1.1.1. Supply Voltages".

Connect on pin 2 of position 1208 a clock signal of 8.4672 MHz (100ppm minimum rise time of 50ns and at TTL level (0V and +5V).
Keep microprocessor 7202 in reset by forcing pin 7 at position 1208 to +5V.
Release the reset. Now, the processor will reset the CD10 for at least 75 µs.
The output clock CL11 should be available now at pin 42 of the CD10.

Check the following frequencies :

Point	Frequency
Position 7000 pin 16	8.4672 MHz ±100ppm
Position 7202 pins 14,15	12MHz ±5%
Position 7309 pin 6	11.2896 MHz ±100ppm
Position 7309 pin 1	2.1168 MHz ±100ppm
Position 7309 pin2	44.1kHz ±100ppm

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Figure 8-8

8.3.3 CD10 Decoder/Servo SAA7324 (7000)

Description

The CD10 is a single chip combining the functions of a CD decoder, digital servo and bitstream DAC. The decoder/servo part is based on the CD7. The decoding part supports a full audio specification and can operate at single speed (n=1) and double speed (n=2).

Block Diagram

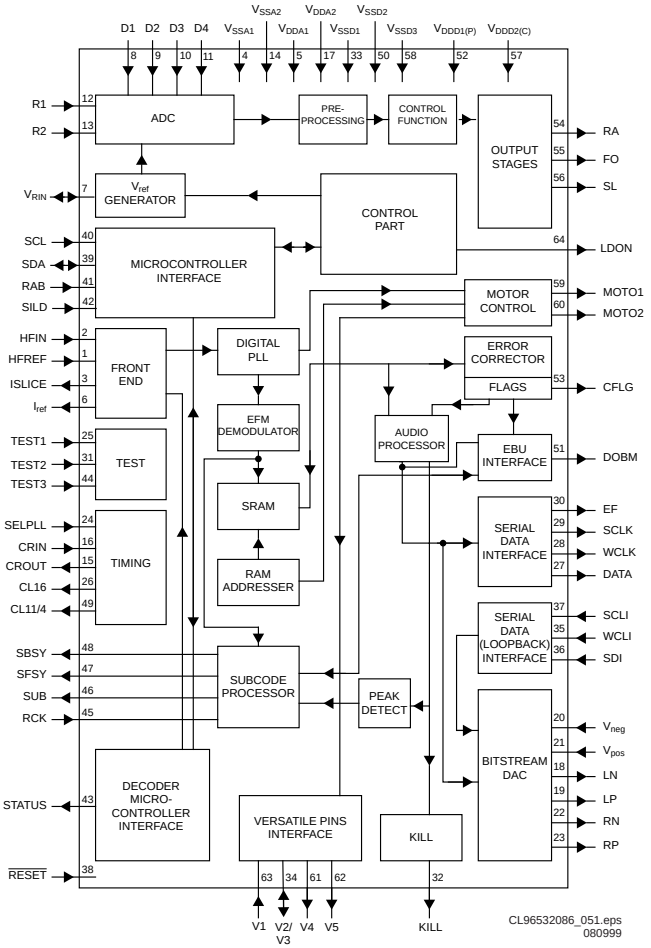

Figure 8-9

Pin Configuration

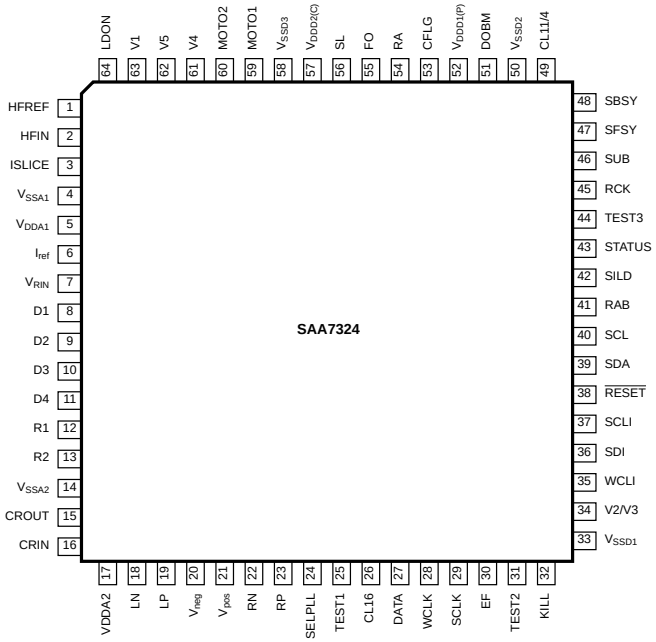

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Figure 8-10

8.3.4 TDA7073A Power Drivers (7021, 7022)

Description

The TDA7073A is a dual power driver circuit for servo systems with a single supply. In this configuration it is used to drive the sledge, tray, focus and radial.

Measurements

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect the power supply as described above in "1.1.1. Supply Voltages". Check the following voltages :

Pin	Location	Value
5	7021	12V ± 10%
5	7022	12V ± 10%
1	7022	1.65V ± 10%
2	7022	1.65V ± 10%
6	7022	1.65V ± 10%
7	7022	1.65V ± 10%
1	7021	5.0 ± 10%
2	7021	5.0 ± 10%
6	7021	1.65V ± 10%
7	7021	1.65V ± 10%

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Figure 8-11

Pin	Location		Value DC
9	7022	FOC	5.8V ± 10%
12	7022	FOC	5.8V
13	7022	RAD	5.8V
16	7022	RAD	5.8V
9	7021	SLE	5.8V
12	7021	SLE	5.8V
13	7021	TRAY-	5.8V
16	7021	TRAY+	5.8V

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Figure 8-12

8.3.5 BA6856FP Turn Table Motor Driver (7020)

Description

This component is a 3 phase, full wave pseudo linear driving system with inbuilt Hall Bias circuit and 3 phase parallel output.

Measurements

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. The outputs 9, 10, 11 of connector 1006 are 0V.
Pin 21 of the motor driver 7020 is 2.5V ±10%.
Pin 22 of the motor driver 7020 is 2.5V ±10%.
Pin 23 of the motor driver 7020 is 0V.
Pin 19 of the motor driver 7020 is 5V ±10%.
Put the processor out of reset to continue the measurement.
Check MOT1 at pin 59 of CD10. The duty cycle of the output should be 50%. Check wave form at pin 11 of 7005-D : amplitude 5V + 5% duty cycle 50%.
The motor driver 7020 can be measured dynamically by connecting a hall motor to the application panel. Apply a pulse of 1V 10Hz and 15% duty cycle to pin 22 (Ec) as input value with reference to pin 21 (Ecr=2.5V). Measure the output signals on the driver. This will give as response a square wave on pin 17 and pin 18. When a positive voltage is applied, the square wave on pin 17 will go ahead of the square wave on pin 18. All signals will have a value as shown in the truth table. Check the following output signals :

Motor controller truth table

Input conditions conn 1006 pin						Outputs conn 1006			Test points on driver		
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL_U	HALL_V	HALL_W
L	M	H	M	M	M	6V	0V	0V	0V	5V	
H	M	L	M	M	M	0V	6V	6V	5V	0V	
M	M	L	M	H	M	0V	6V	0V		0V	5V
M	M	H	M	L	M	6V	0V	6V		5V	0V
H	M	M	M	L	M	0V	0V	6V	5V		0V
L	M	M	M	H	M	6V	6V	0V	0V		5V

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Figure 8-13

Hall-elements input signal voltage levels

Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

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Figure 8-14

8.3.6 Tray Control

Description

The tray control consists of a TDA7073A power driver (7021) controlled by the processor 7202 via pin 19 TRAYIN and pin 20 TRAYOUT. If pin 20 is low and pin 19 high, the TRAY+ signal at pin 16 of 7021 is forced to +8V and the TRAY- signal at pin 13 of 7021 to GND : the tray will open. If pin 20 is high and pin 19 low, TRAY+ becomes GND and TRAY- becomes +8V : the tray will close. If pin 19 and 20 of the processor have the same value, TRAY+ and TRAY- will have the same value as well : the tray stops moving.

Measurements

Keep procesor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect a load of 15 , 7W between pin 3 and 4 of connector 1002. Check the voltage over the load with TRAY+ (pin 3) as positive reference. Check also the levels of pins 19 and 20 of the processor.
U TRAY+,TRAY- = <100mV
Pin 20 = +5V
Pin 19 = +5V
Force pin 20 of the processor to ground, and check the voltages.
U TRAY+,TRAY- = -6.5V(10%
Pin 20 = +0V
Pin 19 = +5V
Force pin 19 of the processor to ground as well and check the levels again.
U TRAY+,TRAY- = <100mV
Pin 20 = +0V
Pin 19 = +0V
Release pin 20 of the processor and check the levels.
U TRAY+,TRAY- = 6.5V(10%
Pin 20 = +5V
Pin 19 = +0V
Release pin 19 of the processor and check the levels again:
U TRAY+,TRAY- = <100mV
Pin 20 = +5V
Pin 19 = +5V

8.3.7 HF Path

Description

The pre-amplified HF-signal is presented to both n=1 and n=2 amplifier circuits. The mux/demux switches via software and micro processor controlled S1 and S2 lines between either one of the amplified n=1 or n=2 signals. The signal will then follow another amplification and filtering circuit. The filtering again is controlled by the S1 and S2 lines, dependant on whether the disc starts up (speed n=1, S1 and S2 Low), disc plays at speed n=1 (S1 Low, S2 High) or disc plays at speed n=2 (S1 and S2 High).

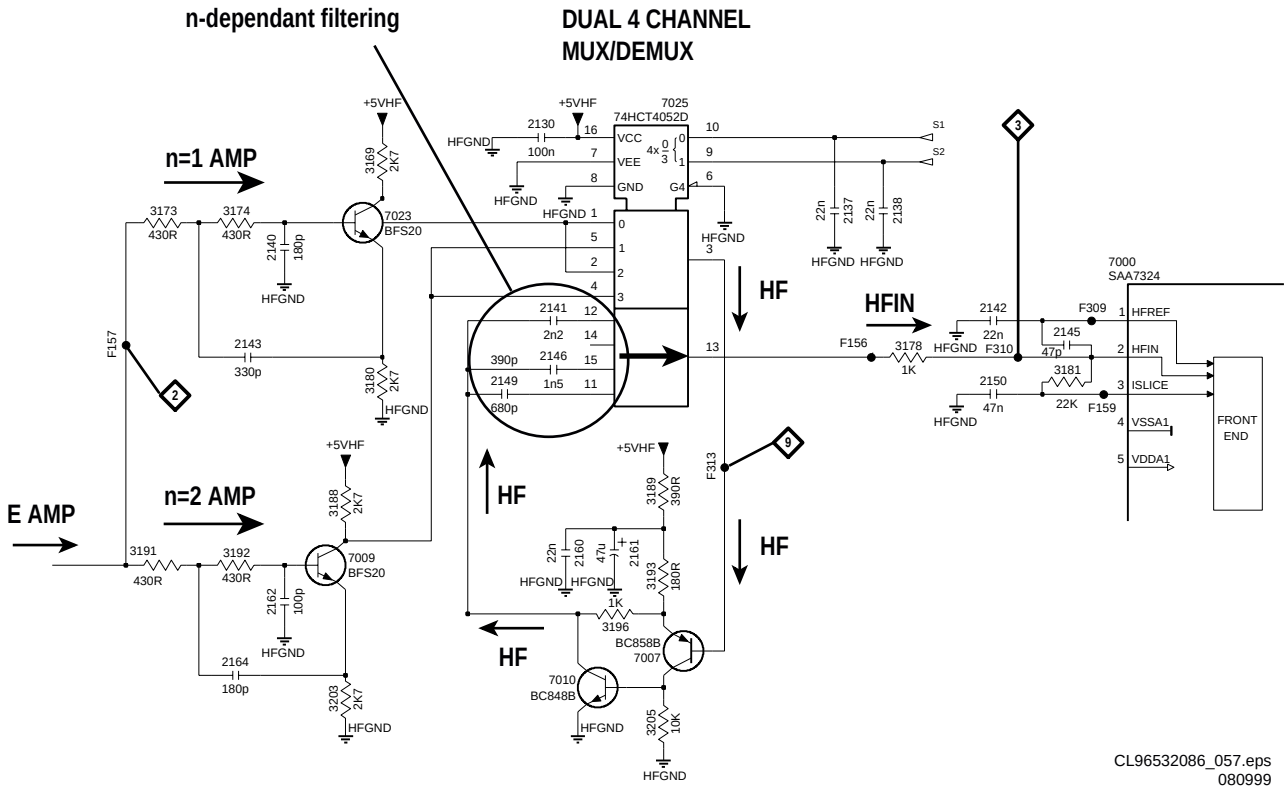

Figure 8-15

DC Settings

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Check the following voltages :

Force	Pin	Location	Measure
	Emitter	7006	2.4 ±10%
S1 and S2 “HIGH”	Collector	7010	1.9 ±10%
S1 and S2 “LOW”	Collector	7010	1.9 ±10%
S1 and S2 “HIGH”	13	7025	1.6 ±10%
S1 and S2 “LOW”	13	7025	1.6 ±10%
S1 and S2 “HIGH”	3	7025	3.2 ±10%
S1 and S2 “LOW”	3	7025	3.2 ±10%

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080999

Figure 8-16

Transfer Characteristics

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the function generator as a sine wave generator with output level of 1Vtt. Check this AC value with an AC mV-meter connected to the input (pin 2) of the CD10 (7000) :

Frequencies	S1 and S2 "low"		S1 and S2 "high"	
	Input V_{AC}	Pin 2 at 7000	Input V_{AC}	Pin 2 at 7000
300 Hz	200mV	< 100mV ± 20%	200mV	< 100mV ± 20%
10 kHz	200mV	295mV ± 20%	200mV	330mV ± 20%
100 kHz	200mV	310 mV ± 20%	200mV	330 mV ± 20%
300 kHz	200mV	385 mV ± 20%	200mV	335 mV ± 20%
800 kHz	200mV	655 mV ± 20%	200mV	485 mV ± 20%
1.5 MHz	200mV	1.1V ± 20%	200mV	760 mV ± 20%
3MHz	200mV	1.1V ± 20%	200mV	1.1V ± 20%

CL96532086_059.eps
080999

Figure 8-17

HFDET Setting

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the function generator as a sine wave generator with output level of 500 kHz, 1Vtt. Check this AC value with an AC mV-meter :

Location	Voltage DC		Voltage AC
	No HF	HF	
F190	4.8V± 20%	4.8V± 20%	175mV± 20%
F192	< 100mV	1.1V± 20%	-
F206	4.9V± 20%	150mV± 20%	-

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080999

Figure 8-18

8.3.8 Audio Part - DAC

Description

The DAC used, is the UDA1320 bit stream, continuous calibration. I2S signals from various formats can be entered at pins 1,2 and 3. If these signals are in phase with the delivered system clock at pin 6, the DAC will reproduce analog output signals at pins 14 and 16. 0dB level is 0.85Vrms. These analog signals are at 1.65Vdc level.
The DAC has features which can be checked on the input pins. Mute will switch off the analog signals. De-emphasis is not used, since this is done in the decoder. Attenuation of -12dB is not used because this is also done in the decoder.

I2S

I2S is a kind of digital audio format, consisting out of 3 lines : CLOCK, WORDSELECT and DATA.

WORD-SELECT

Word select (WS) indicates whether the data-sample is from the left or the right audio-channel. It has the same frequency as the sample rate of the digital audio signal. This can be 32, 44.1 or 48kHz. Normal polarity is low for a left sample and high for a right sample. So within the low state of the WS-line the data bits for the left channel are transferred, and within the high state the data bits of the right channel are transferred.

CLOCK

The CLOCK signal (CLK) indicates when DataTips must be set, and when DataTips must be read. The frequency depends on the speed of the I2S-bus, but is always a factor of the frequency of the WS-signal. It can be 48x, 64x, 96, 128x... .In our case it is 48x the sample rate frequency = 2.1168MHz. The signal is in phase with the WS-signal. Transition of the WS always happens on a falling edge of the CLK.

DATA

DATA contains all data-bits. Data bits are set by the transmitting device, and read by the receiving device. The position of the DATA-bits within the WS-signal is very important. There are several formats for this. In our case we always use Philips I2S format, no Japanese or Sony format. The number of data-bits per channel depends on the used devices.

Timing of the I2S-bus, in case of Philips I2S is shown in the next figure :

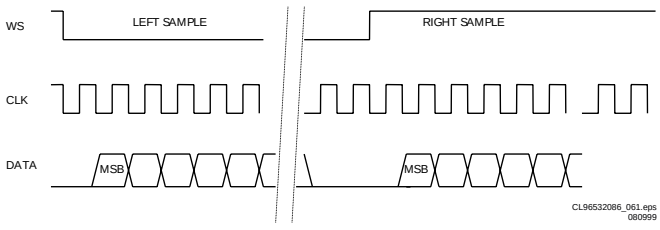

Figure 8-19

Measurements

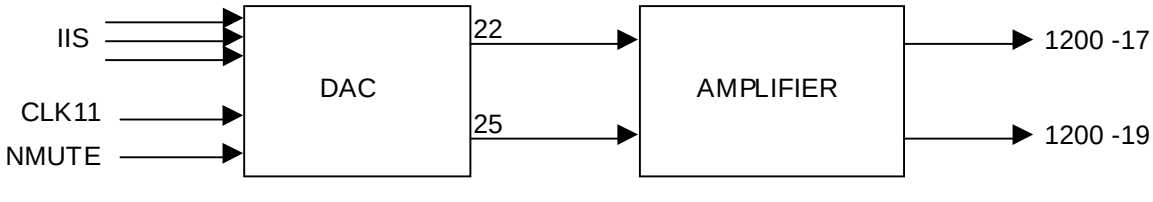

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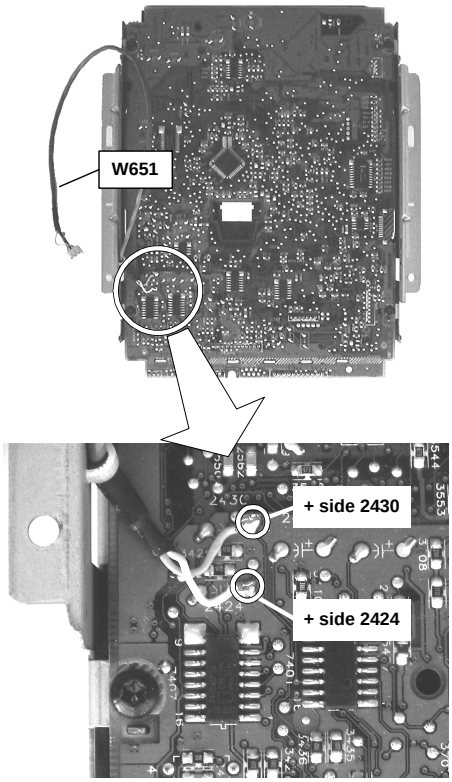
Figure 8-20

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. This puts the processor outputs in tristate. Check the reset at pin 4 of processor 7202 to make sure that the processor is in reset.
Now, force port 0-4 pin 33 at 7202 to 0V to set the decoder outputs (SCLK, WCLK, DATA, and CL11).
Check the MUTE pin 11 at 7309 : this pin should be low.
Connect via an I2S generator I2S-signals to the DAC :
Pin 1 at 7309: SLCK.
Pin 2 at 7309: WCLK.
Pin 3 at 7309: DATA.
Connect also the SYSCLK pin 6 at position 7309 to a clock signal of 11.2896 MHz ±100ppm.
Generate an I2S signal equivalent with a sine wave of 1kHz at 0dB for both left and right channels.
Check if 0.8 VRMS at pins 14 and 16 at location 7209 with a DC of 1.65VDC.
Check if 1.7 VRMS ±2 dB at connector pins 1and 3 at location 1209.
Force MUTE Pin 11 at 7309 high.
Measure again at pins 1 and 3 at location 1209 : both signals should be at -90 dB.

9. WIRING DIAGRAM

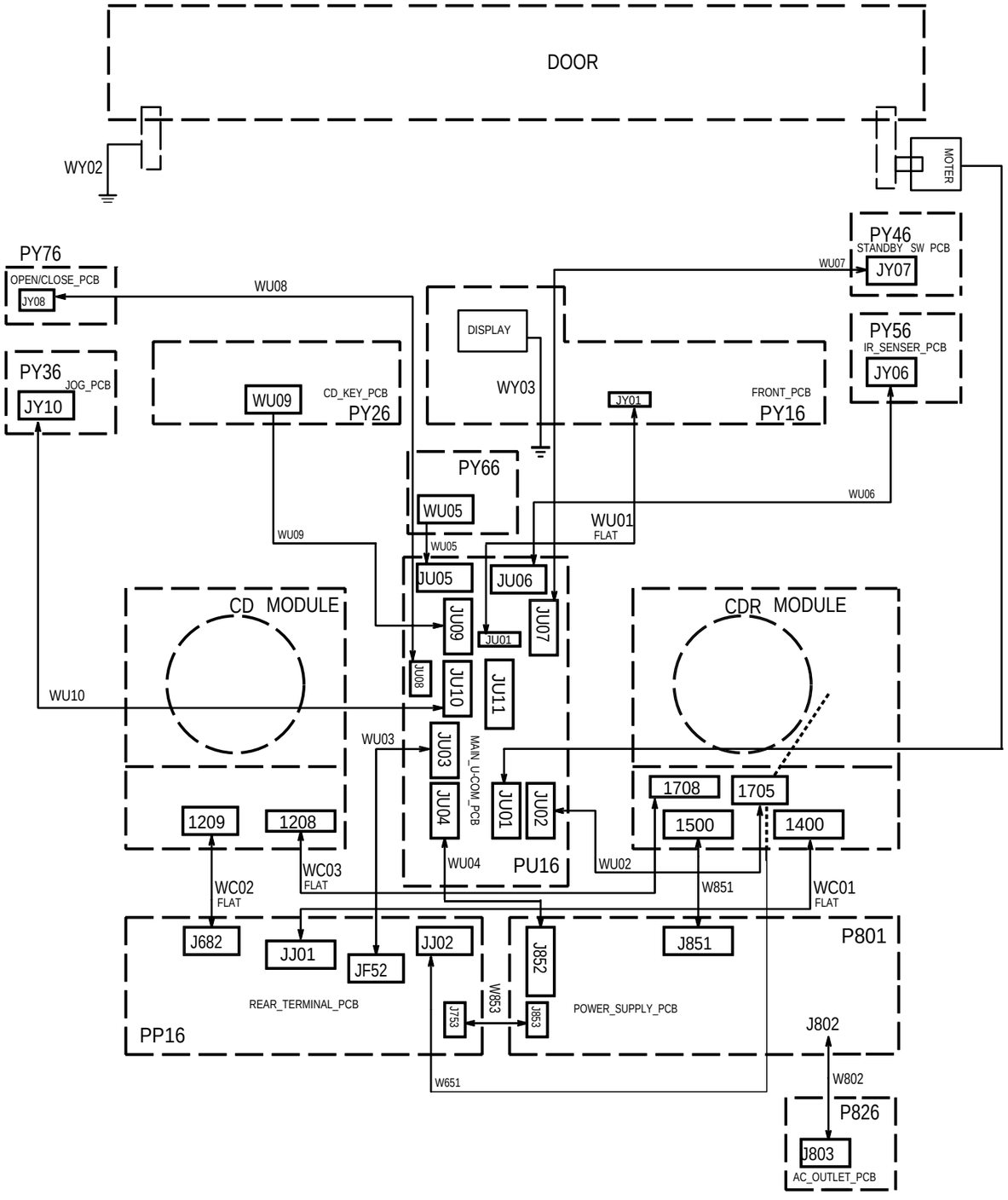
DISMOUNTING ADDITIONAL CABLES



De-soldering and remove cables **W651** from the loader PCB.

REMARK When replace the CDR module MAR775 to the new one. It is necessary to add removed cables at same positions as follows;

- WHITE ▪▪▪▪ + side lead of capacitor 2424
- PINK ▪▪▪▪▪ + side lead of capacitor 2430



SIGNALS OF EACH WIRES

W851(J851 TO CDR MODULE)

1 +5V
2
3
4 GND
5 +5V
6 +5V
7 GND
8 GND
9 GND
10 +12V
11 -8V

W802(J802 TO J803)

1 COLD
2 HOT

WU02(JU02 TO CD MODULE)

1 5VM
2
3
4 RESET IN
5 IIC DATA
6 GND
7 IIC CLK
8 INTERRUPT
9 GND

WU03(JF52 TO JU03)

1 INT/EXT
2 RC-5 IN
3 RC-5 OUT
4 SUS SW
5 SYS MUTE
6 STB MUTE
7 DU/THROUGH
8 GND

W853

1 +12V
2 GND

WU04(J852 TO JU04)

1 +5V
2 GND
3 STANDBY
4 GND
5 +12V

WU05(TO JU05)

1 5V
2 GND
3 RC-5

WU06(JY06 TO JU06)

1 5V
2 GND
3 RC-5

WU07(JY07 TO JU07)

1 STANBY
2 RED
3 GND
4 GRN

WU08(JY08 TO JU08)

1 GND
2 KEY0

WU09(TO JU09)

1 GND
2 KEY1
3 KEY0

WC02

1 KILL
2 GND
3 CD DOBM
4 GND
5 CD LCH
6 GND
7 CD RCH

WU10(JY10 TO JU10)

1 PULSE
2 PULSE
3 KEY
4 GND

WU01(JY01 TO JU01)

1 KEY2
2 KEY3
3 5VM
4 5VM
5 GND
6 GND
7 WR
8 RD
9 D1
10 A0
11 D0
12 D2
13 D3
14 BLOF
15 RST
16 D7
17 D6
18 D5
19 D4
20 DIMR

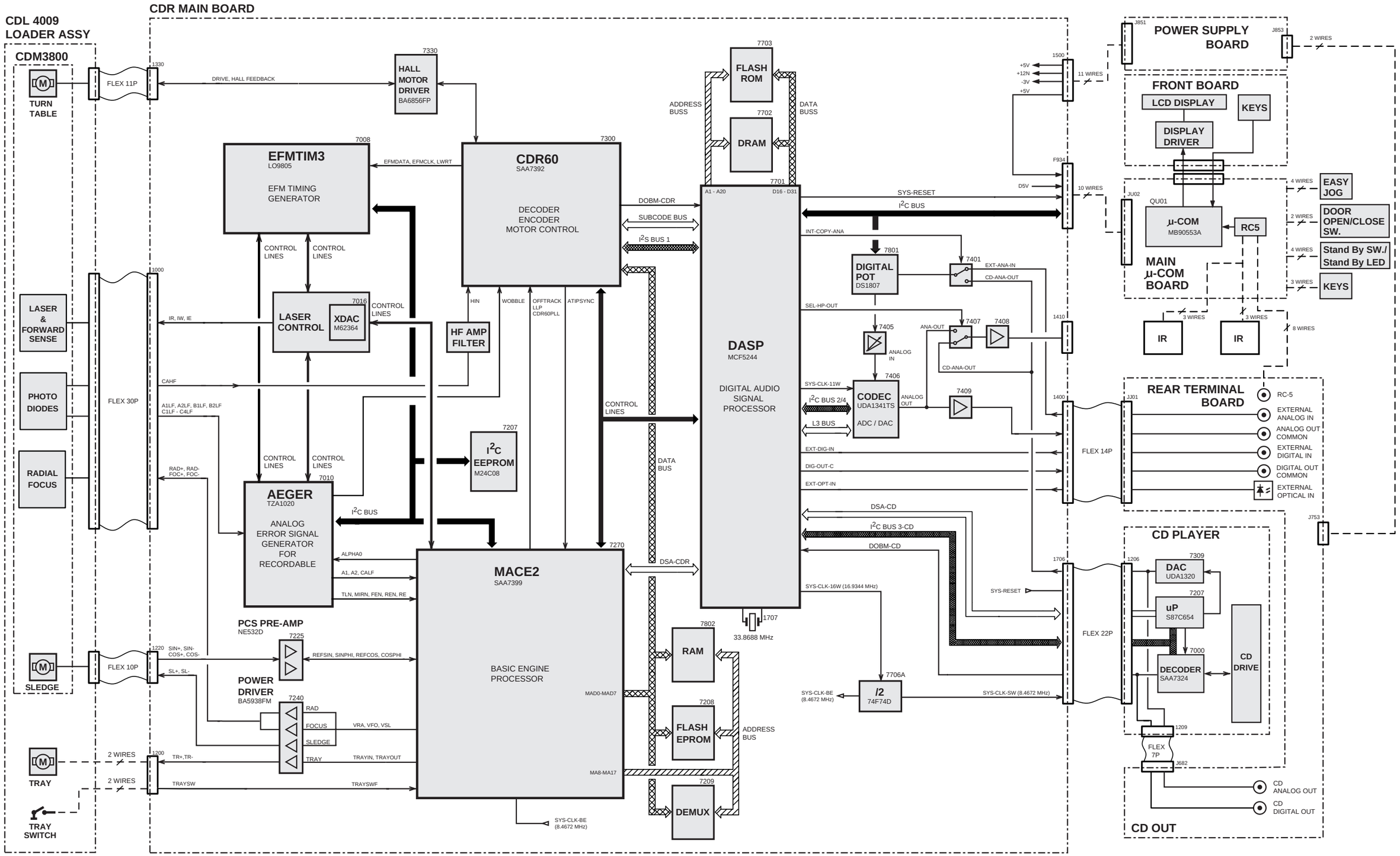
W651

1 CDROUT RIGHT
2 GND
3 CDROUT LEFT

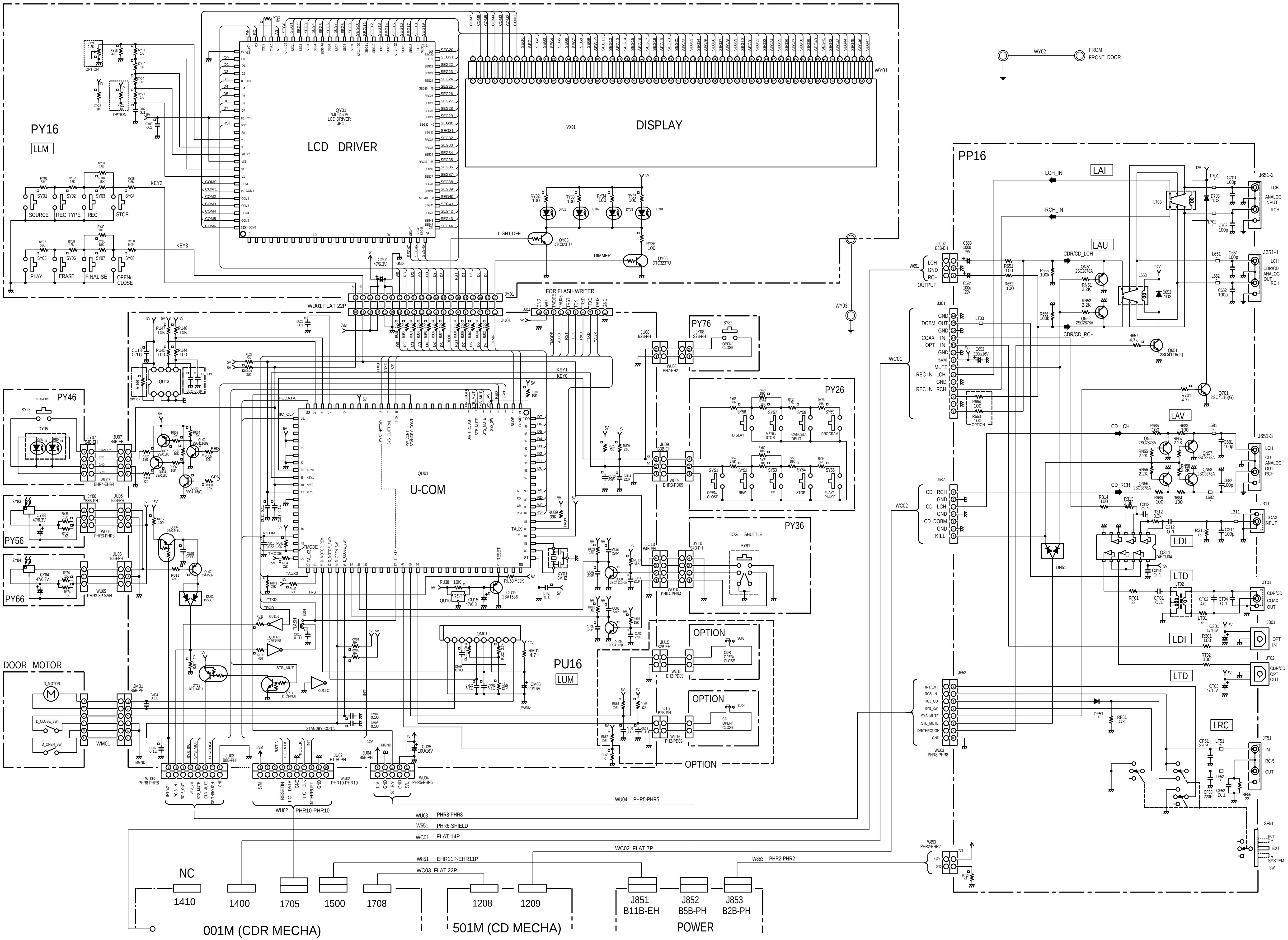
WC01

1
2
3
4 REC IN RCH
5 GND
6 REC IN LCH
7 MUTE
8 5V
9 GND
10 OPT IN
11 COAX IN
12 GND
13 DOBM OUT
14 GND

10. BLOCK DIAGRAM



11. SCHEMATIC DIAGRAM AND PARTS LOCATION


PY16
LLM
LCD DRIVER
QY01
NJU6450A
LCD DRIVER
JRC
DISPLAY
VX01
WY01
WY02
FROM
FRONT DOOR
SOURCE
REC TYPE
REC
STOP
PLAY
ERASE
FINALISE
OPEN/
CLOSE
KEY2
KEY3
LIGHT OFF
DIMMER
WU01 FLAT 22P
FOR FLASH WRITER
PY46
PY56
PY66
DOOR MOTOR
PY76
PY26
PY36
JOG SHUTTLE
U-COM
QU01
PU16
LUM
OPTION
PP16
LAI
LAU
LAV
LDI
LTD
LRC
WC01
WC02
W651
OUTPUT
ANALOG
INPUT
CDR/CD
ANALOG
OUT
CD
ANALOG
OUT
COAX
INPUT
OPT
IN
OPT
OUT
SYSTEM
SW
WU04 PHR5-PHR5
WU03 PHR8-PHR8
W651 PHR6-SHIELD
WC01 FLAT 14P
WC02 FLAT 7P
W851 EHR11P-EHR11P
W853 PHR2-PHR2
WC03 FLAT 22P
NC
1410
1400
1705
1500
1708
001M (CDR MECHA)
1208
1209
501M (CD MECHA)
J851
B11B-EH
J852
B5B-PH
J853
B2B-PH
POWER

P816

LPS

N VERSION ONLY

W802 VHR2-VHR2

J802

P826

J803

J804

OUTLET

INLET

J801

Z001
AC CORD

L820

C819 0.01 250V

C825 470pF /400V

C826 470pF /400V

C828 470pF /400V

R819 1M(CB)

C820 0.01 250V

J821 *

J820 *

F820 T2A_250V(CB)

G815 0.01

S815

D802 S1WB

C821 120 /400V

HEAT SINK

STR-G6551

Q825

R820 82k 2W

C822 0.047u

R821 68k 3W

R822 68k 3W

D803 ERA22-10

R825 4.7

R826 4.7

C827 150p 2kV

C824 150p 2kV

D804 1D3

C830 47 /35V

C832 0.1u

R829 1k

C898 0.1

R823 0.47 1W

R830 4.7

J828

L831

L831

D856 RK46

5.92V

C856 0.1

C857 2200 /10V

L856 6.8UH

HEAT SINK

Q851 SI-3050 +5V

3.9V

5VM

5.2V

R851 27

R852 1k

5.0V

C859 47/16V

D857 1D3

R890 4.7

11.6V

HEAT SINK

Q852 7805

5VU

5.1V

C853 470 /16V

C858 47/16V

5V

J851

FOR CDR MECHA

GND

+5VM

+5VM

GND

GND

GND

+12V

-8V

L867 2.2uH

HEAT SINK

Q861 SI-3050 +5V

12V

12.1V

R861 1.2k

R862 1.2k

5.0V

C863 47/16V

D866 RU4AM

12.7V

C866 0.1

C867 1000 /16V

Q871 7908

-8V

-8.0V

C873 47/16V

D871 AG01

-12.4V

L872 10UH

C871 0.1

C872 220 /16V

HEAT SINK

Q872 2SB1185

-12.4V

-10.8V

C874 47/16V

R872 3.3k

R873 10k

-10.2V

R871 100

R889 150

R888 10k

D872 4.7V

Q875 DTA144

J852

FOR U-COM PCB

+5VM

GND

STBY

GND

+12V

J853

+12V

GND

FOR IN/OUT PCB

STANDBY L

5V

R853 1k

Q853 DTC144

5V

R854 4.7k

5.0V

Q854 DTC144

2.5V

R827 3.3k

D807 *

Q802 PC123F

C882 0.022

R883 1.8K

D881 TL431

R884 2.21K

R885 150

R886 0

C881 1/50V

R881 3.3K

C831 470p

J891

C898 0.1

V

20

10

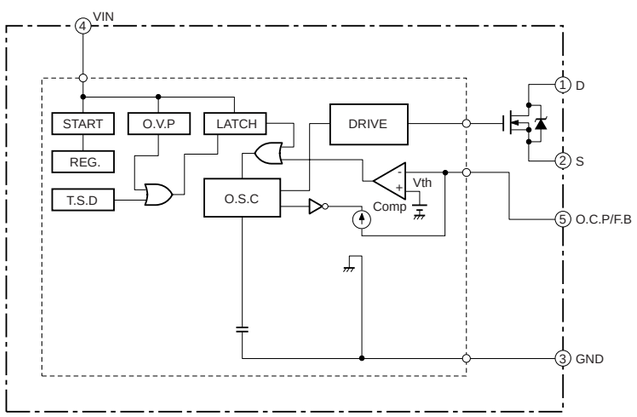
20

0

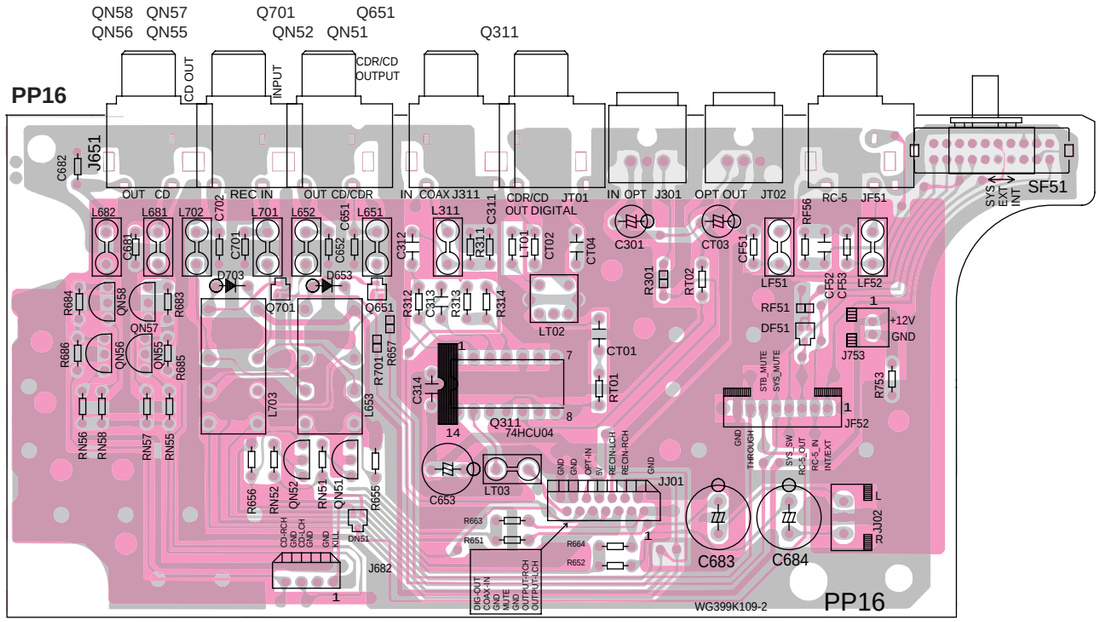
(US)T

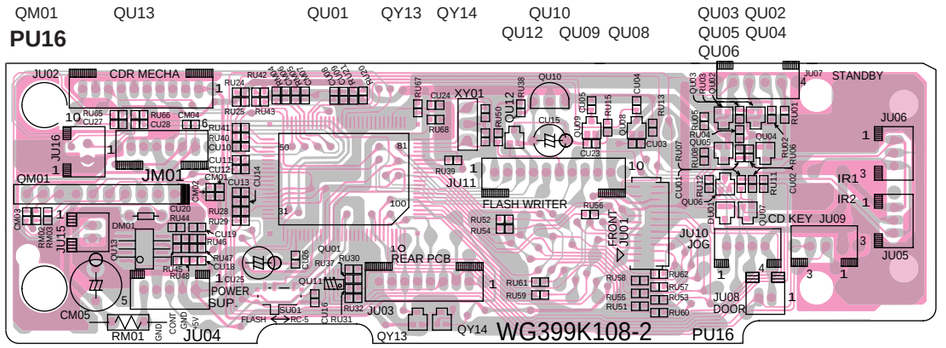
-80

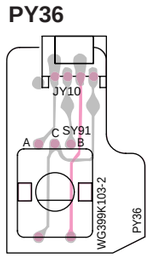
Q825 : STR-G6551

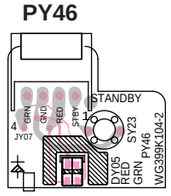


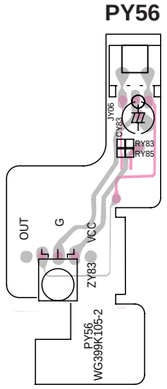
MEASURED WHEN IT PLAYED AT 230VAC

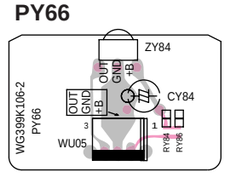

PP16
WG399K109-2
PP16

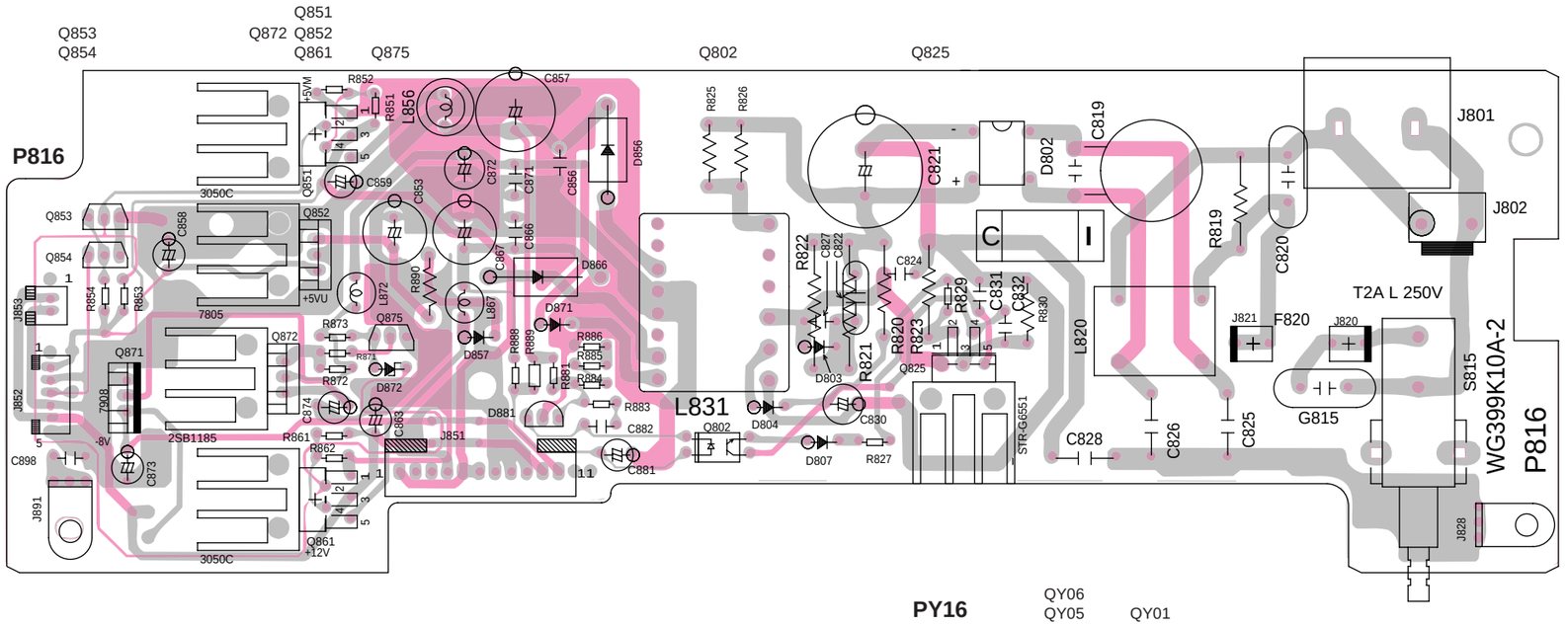

PU16
WG399K108-2
PU16

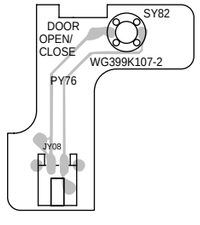

PY36
WG399K103-2
PY36

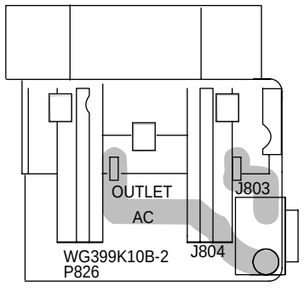

PY46
WG399K104-2

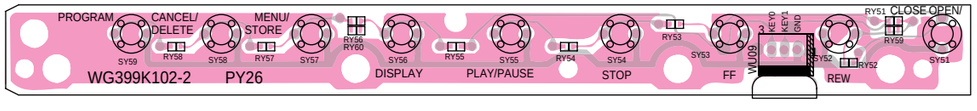

PY56
WG399K105-2

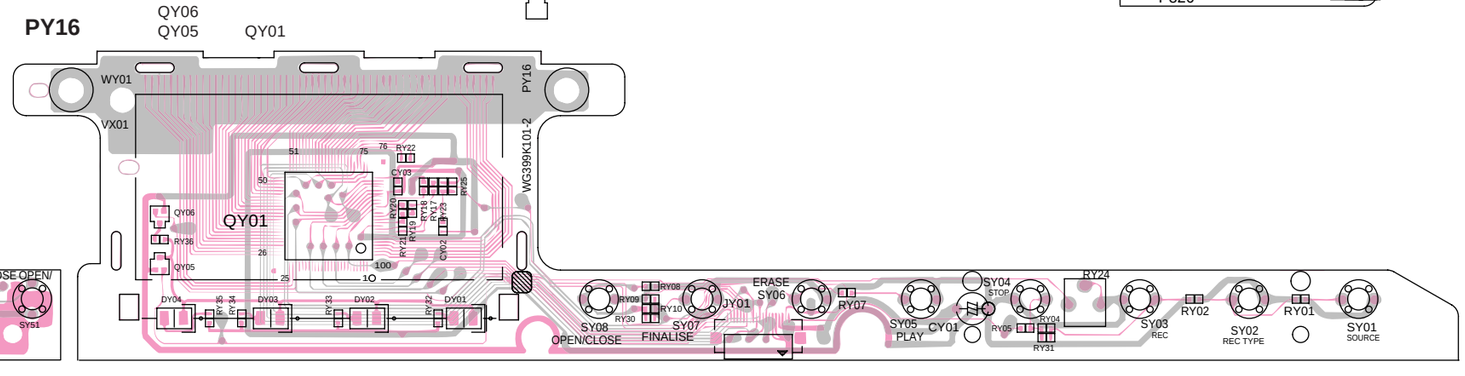

PY66
WG399K106-2


P816
WG399K10A-2
P816

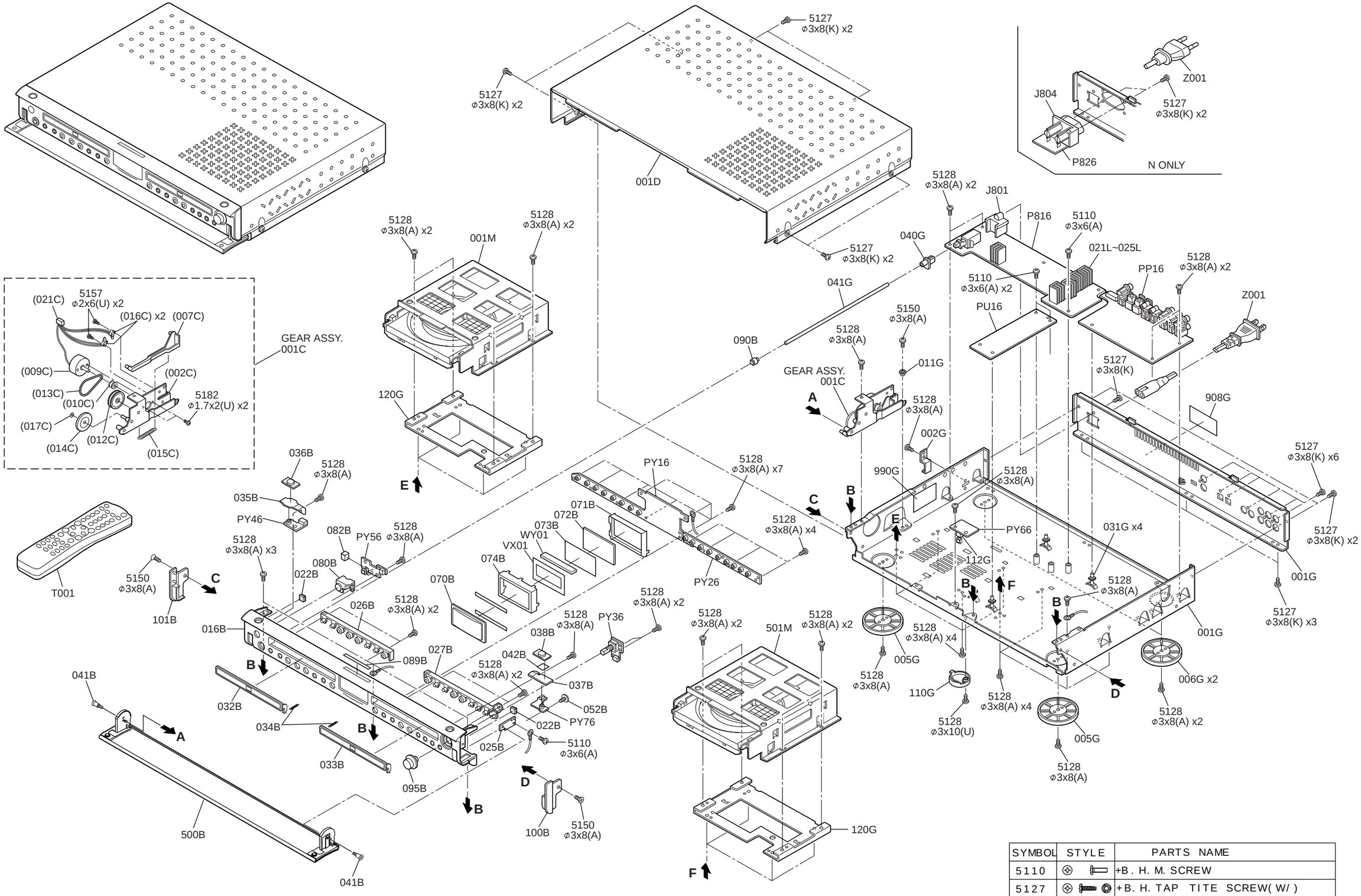

PY76
WG399K107-2


P826
WG399K10B-2
P826


PY26
WG399K102-2
PY26


PY16
WG399K101-2
PY16

12. EXPLODED VIEW AND PARTS LIST



MARK	MATERIAL/ FINISH
(A)	STEEL/ CHROMATE
(U)	STEEL/ BLACK
(K)	STEEL/ NICKEL

SYMBOL	STYLE	PARTS NAME
5110		+B. H. M. SCREW
5127		+B. H. TAP TITE SCREW(W/)
5128		+B. H. TAP TITE SCREW(B TYPE)
5150		+F. H. TAP TITE SCREW(B TYPE)
5157		+P. H. TAP TITE SCREW(S TYPE)
5182		+P. H. M. SCREW(MINUTE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
016B		9965 000 08190	FRONT PANEL	399K248010
022B		4822 526 20213	MAGNET ASSY	271K305500
026B		9965 000 08191	BUTTON FOR CDR	399K270020
027B		9965 000 08192	BUTTON FOR CD	399K270030
032B		9965 000 08196	TRY ESCUTCHEON CDR	399K063010
033B		9965 000 08197	TRY ESCUTCHEON CD	399K063020
034B		9965 000 08198	TRY ESCUTCHEON SPRING	399K115010
035B		9965 000 08205	STANDBY BUTTON	327J270010
036B		9965 000 08206	STANDBY BUTTON LENS	327J355010
037B		9965 000 08207	OPEN/CLOSE BUTTON	399K270040
038B		9965 000 08208	OPEN/CLOSE BUTTON LENS	327J355020
041B		9965 000 08209	DOOR SCREW NI	327J010110
070B		9965 000 08210	LCD WINDOW	399K158010
080B		9965 000 08211	IR LENS FOR FRONT PANEL	327J355030
089B		9965 000 08212	MARANTZ BADGE	327J251110
090B		9965 000 08213	POWER BUTTON	399K270010
095B		9965 000 08214	EASY JOG KNOB	399K154010
100B		9965 000 08215	SIDE BUSHING R	327J259010
101B		9965 000 08216	SIDE BUSHING L	327J259020
500B		9965 000 08180	ESCUTCHEON DOOR PANEL ASSY	399K063500
001C		4822 522 33389	GEAR ASSY	446T058500
007C		4822 404 21283	LEVER	446T354010
008C		9965 000 00694	D.C MOTOR ASSY	*MM000630R
009C		4822 361 11027	D.C MOTOR	MM00200010
012C		4822 528 40363	PULLEY	446T262020
013C		4822 358 31264	BELT	446T264010
014C		4822 522 33388	GEAR	446T058010
015C		4822 492 33411	SPRING	446T115010
016C		4822 271 30768	MINI LEAF SW	SM01011530
017C		4822 462 71954	STOPPER WASHER	204K114210
005G		9965 000 08217	LEG FRONT	271K057270
006G		9965 000 08218	LEG REAR	271K057280
040G		9965 000 08219	POWER BUTTON LINK	399K121010
041G		9965 000 08220	SHAFT POWER BUTTON	399K112010
110G		9965 000 01079	IR LENS MAIN CHASSIS BUTTOM	282J355020
001M			MECHANISM CD-RW MODULE MAR775	388K304500
501M			MECHANISM CD MODULE MAR1250	388K304600
			PACKING	
001T	C1S		USER GUIDE C	399K851350
001T	N1S	9965 000 08221	USER GUIDE EURO	399K851310
T001		9965 000 08237	REMOTE CONTROLLER RC2100DR	ZK399K0010
⚠ Z001	C1S		MAINS CORD 250V 2.5A	ZC02009020
⚠ Z001	N1S	4822 321 11211	MAINS CORD 250V 2.5A	ZC02003150
			NOT STANDARD SPARE PARTS	
001S			PACKING CASE	399K801010
002S			CUSHION L SIDE	399K809010
003S			CUSHION R SIDE	399K809020
013S			CUSHION FOR SET TOP SIDE	327J809110

13. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R＊＊＊ : 1) GD05 x x x 140, Carbon film fixed resistor,±5% 1/4W
R＊＊＊ : 2) GD05 x x x 160, Carbon film fixed resistor,±5% 1/6W
① Resistance value

Examples
① Resistance value

0.1Ω 001	10Ω 100	1kΩ 102	100kΩ 104
0.5Ω 005	18Ω 180	2.7kΩ 272	680kΩ 684
1Ω 010	100Ω 101	10kΩ 103	1MΩ 105
6.8Ω 068	390Ω 391	22kΩ 223	4.7MΩ 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS

C＊＊＊ : CERAMIC CAP.
3) DD1 x x x x 370, Ceramic capacitor
Disc type
Temp.coeff. P350~N1000, 50V
③ Capacity value
② Tolerance

Examples
② Tolerance (Capacity deviation)
±0.25 pF 0
±0.5 pF 1
±5 % 5
Tolerance of COMMON PARTS handled here are as follows :
0.5 pF - 5 pF ..... ± 0.25 pF
6 pF - 10 pF ..... ± 0.5 pF
12 pF - 560 pF ... ± 5 %
③ Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 pF 015	47 pF 470	560 pF 561

C＊＊＊ : CERAMIC CAP.
4) DK16 x x x 300, High dielectric constant ceramic capacitor
Disc type
Temp.chara. 2B4, 50V
④ Capacity value

Examples
④ Capacity value

100 pF 101	1000 pF 102	10000 pF 103
470 pF 471	2200 pF 222	

C＊＊＊ : 5) ELECTROLY CAP.( ), 6)FILM CAP ( )
5) EA x x x x x 10, Electrolytic capacitor
One-way lead type,Tolerance±20%
⑥ Working voltage
⑤ Capacity value

Examples
⑤ Capacity value

0.1μF 104	4.7μF 475	100μF 107
0.33μF 334	10μF 106	330μF 337
1μF 105	22μF 226	1100μF 118
2200μF 228		

⑥ Working voltage

6.3 V 006	25 V 025
10 V 010	35 V 035
16 V 016	50 V 050

6) DF15 x x x 350 → Plastic film capacitor
DF15 x x x 310 → One-way type, Mylar ±5% 50V
DF16 x x x 310 → Plastic film capacitor
One-way type, Mylar ±10% 50V
⑦ Capacity value

Examples
⑦ Capacity value

0.001μF (1000 pF) 102	0.1μF 104
0.0018μF 182	0.56μF 564
0.01μF 103	1μF 105
0.015μF 153	

NOTE 1) The above CODES(R＊＊＊ ,R＊＊＊ ,C＊＊＊ ,C＊＊＊ and C＊＊＊) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to “Common Parts List” for the other common parts**(RI05, DD4, DK4)**.

NOTE ON SAFETY FOR FUSIBLE RESIST OR :

The suppliers and their type numbers of fusible resistors are as follows ;
1 . KOA Corporation

Part No.(MJI)	Type No.(KOA)	Description
NH05 x x x 140	RF25S x x x x Ω	J ±5% (1/4W)
NH05 x x x 120	RF50S x x x x Ω	J ±5% (1/2W)
NH85 x x x 110	RF73B2A x x x x Ω	J ±5% (1/10W)
NH95 x x x 140	RF73B2E x x x x Ω	J ±5% (1/4W)

＊ Resistance value　　Resistance value(0.1Ω - 10k Ω)

2. Matsushita Electronic Components Co., Ltd

Part No.(MJI)	Type No.(MEC)	Description
NF05 x x x 140	ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		

＊Resistance value

Examples
＊Resistance value

0.1Ω 001	10Ω 100	1kΩ 102	100kΩ 104
0.5Ω 005	18Ω 180	2.7kΩ 272	680kΩ 684
1Ω 010	100Ω 101	10kΩ 103	1MΩ 105
6.8Ω 068	390Ω 391	22kΩ 223	4.7MΩ 475

ABBREVIATION AND MARKS			
ANT.	: ANTENNA	BATT.	: BATTERY
CAP.	: CAPACITOR	CER.	: CERAMIC
CONN.	: CONNECTING	DIG.	: DIGITAL
HP	: HEADPHONE	MIC.	: MICROPHONE
μ-PRO	: MICROPROCESSOR	REC.	: RECORDING
RES.	: RESISTOR	SPK	: SPEAKER
SW	: SWITCH	TRANSF.	: TRANSFORMER
TRIM.	: TRIMMING	TRS.	: TRANSISTOR
VAR.	: VARIABLE	X' TAL	: CRYSTAL

NOTE ON SAFETY:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠ Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

安全上の注意：

⚠ がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			PP16-MAIN AUDIO CIRCUIT BOARD	
			PP16-CAPACITORS	
CF51		4822 126 10408	CER. 220pF ±10%	DA16221110
CF52		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
CF53		4822 126 10408	CER. 220pF ±10%	DA16221110
CT01		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
CT02		4822 126 10513	CER. 47pF ±5%	DA15470110
CT03		4822 124 41539	ELECT 47µF M 16V	OA47601620
CT04		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C301		4822 124 41539	ELECT 47µF M 16V	OA47601620
C311		4822 126 10364	CER. 100pF ±10%	DA16101110
C312		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C313		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C314		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C651		4822 126 10364	CER. 100pF ±10%	DA16101110
C652		4822 126 10364	CER. 100pF ±10%	DA16101110
C653		4822 124 90364	ELECT 220µF M 16V	OA22701620
C681		4822 126 10364	CER. 100pF ±10%	DA16101110
C682		4822 126 10364	CER. 100pF ±10%	DA16101110
C683		4822 124 80119	ELECT 100µF 25V ARS	OA10702540
C684		4822 124 80119	ELECT 100µF 25V ARS	OA10702540
C701		4822 126 10364	CER. 100pF ±10%	DA16101110
C702		4822 126 10364	CER. 100pF ±10%	DA16101110
			PP16-RESISTORS	
RF51		4822 051 30473	CHIP 47k Ω ±5% 1/16W	NN05473610
R301		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610
R311		4822 111 41355	75 Ω ±5% 1/6W	GD05750160
R657		4822 051 30472	CHIP 4.7k Ω ±5% 1/16W	NN05472610
R701		4822 051 30472	CHIP 4.7k Ω ±5% 1/16W	NN05472610
			PP16-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RF56 RN51 RN52 RN55-RN58 RT01 RT02 R312 R313 R314 R651 R652 R655 R656 R683-R686 R753	
			PP16-SEMICONDUCTORS	
DF51		4822 130 80522	CHIP DIODE 1SS300 DAP202U	HZ21006000
DN51		4822 130 80522	CHIP DIODE 1SS300 DAP202U	HZ21006000
D653		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D703		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
QN51		4822 130 43818	TRS. 2SC2878 A RANK	HT328781A0
QN52		4822 130 43818	TRS. 2SC2878 A RANK	HT328781A0
QN55 ∫ QN58		4822 130 43818	TRS. 2SC2878 A RANK	HT328781A0
Q311		4822 209 63182	IC LC74HCU04	HC700400U0
Q651		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
Q701		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
			PP16-MISCELLANEOUS	
JF51		9965 000 07431	TERMINAL CINCH JACK ORANGE	YT02021090
JJ01		9965 000 07564	JACK 14FMN-BTRK	YJ07019380
JT01		4822 265 10328	TERMINAL CINCH JACK 1P	YT02010780
JT02		4822 267 31369	OPT. CONNECTOR GP1F32T OUTPUT	YJ15000090
J301		4822 218 11487	OPT. CONNECTOR GP1F32R RECEIVER	YJ15000150
J311		4822 265 10684	TERMINAL CINCH JACK 1P	YT02011020
J651		4822 265 11025	TERMINAL CINCH JACK 6P	YT02060590
J682		9965 000 07565	JACK FFC CONNECTOR 07P 9604S-07C	YJ07011370

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
LF51		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
LF52		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
LT01		4822 111 41355	RES. 75 Ω ±5% 1/6W	GD05750160
LT02		4822 142 60422	PULSE TRANSF.	TP41042030
LT03		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L311		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L651		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L652		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L653		9965 000 01343	RELAY MR62-12SR	LY20120510
L701		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L702		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L703		9965 000 01343	RELAY MR62-12SR	LY20120510
L681		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
L682		4822 242 80418	CORE BL02RN2-R62T2 FERRITE BEAD	FC90050130
SF51		9965 000 08230	SLIDE SWITCH SSSF141700	SS04030350
			PU16-MAIN µ-COM CIRCUIT BOARD	
			PU16-CAPACITORS	
CM01 ∫ CM04		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CM05		4822 124 90364	ELECT 220µF M 16V	OA22701620
CM06		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CM07		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU01		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU02		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU03		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU04		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU05		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU08		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU09		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU10		4822 126 11704	CER. 0.022µF +80 -20% 50V F	DK98223300
CU11		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU12		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU13		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU14		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU15		4822 124 21901	ELECT 47µF 6.3V	EJ47600610
CU16		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU18		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU23		4822 126 11682	CER. 220pF ±10% 50V	DK96221300
CU24		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CU25		4822 124 90352	ELECT 10µF M 16V	OA10601620
CU26		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
			PU16-RESISTORS	
RM01		4822 111 90967	FUSE 4.7 Ω J 1/4W	NF05047140
RM02		4822 051 30272	CHIP 2.7k Ω ±5% 1/16W	NN05272610
RM03		4822 051 30221	CHIP 220 Ω ±5% 1/16W	NN05221610
RM04		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610
RM05		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610
RU01		4822 051 30221	CHIP 220 Ω ±5% 1/16W	NN05221610
RU02		4822 051 30181	CHIP 180 Ω ±5% 1/16W	NN05181610
RU03 ∫ RU08		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610
RU11		4822 051 30473	CHIP 47k Ω ±5% 1/16W	NN05473610

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
RU12		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610
RU13		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610
RU15		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610
RU20		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610
RU21		4822 051 30153	CHIP 15k Ω ±5% 1/16W	NN05153610
RU24		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610
RU25		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610
RU28		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610
RU29		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610
RU30		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610
RU31		4822 051 30471	CHIP 470 Ω ±5% 1/16W	NN05471610
RU32		4822 051 30471	CHIP 470 Ω ±5% 1/16W	NN05471610
RU37		4822 051 30473	CHIP 47k Ω ±5% 1/16W	NN05473610
RU38		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610
RU39		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610
RU40				
∫		4822 051 30223	CHIP 22k Ω ±5% 1/16W	NN05223610
RU43				
RU44		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610
RU45		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610
RU46		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610
RU47		4822 051 30103	CHIP 10k Ω ±5% 1/16W	NN05103610
RU50		4822 051 30393	CHIP 39k Ω ±5% 1/16W	NN05393610
RU51				
∫		4822 051 30101	CHIP 100 Ω ±5% 1/16W	NN05101610
RU62				
RU68		4822 116 82487	CHIP 0 Ω ±5% 1/16W	NN05000610
			PU16-SEMICONDUCTORS	
DM01		9965 000 08231	RES. 430 Ω ±5% 1/6W	GD05431160
DU01		4822 130 83715	CHIP DIODE 1SS301 DAN202U	HZ21005000
QM01		4822 209 30193	IC LB1641 MOTOR DRIVER	HC10279030
QU01		9965 000 08234	IC PROGRAMMED MICROPROCESSOR	*HU100480R
QU02		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0
QU03		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
QU04		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0
QU05		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
QU06		4822 130 61199	SEMICON.COMP DTA144EU	BA10014210
QU07		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0
QU08		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
QU09		4822 130 61541	CHIP TRS. 2SC4116	HX341162B0
QU10		4822 209 15921	IC RESET IC S-806D-Z	HC10077530
QU11		5322 209 13487	IC TC7W14FU 932206827682	HC10442050
QU12		4822 130 61554	CHIP TRS. 2SA1586 (Y GR)	HX115862B0
QU13		9965 000 08235	IC AT24C04N-10SI-2.5	HC10033990
QY13		4822 130 61199	SEMICON.COMP DTA144EU	BA10014210
QY14		4822 130 60856	SEMICON.COMP DTC144EC	BA20021210
			PU16-MISCELLANEOUS	
JU01		9965 000 08232	JACK FH12-20S-0.5SV	YJ07022170
SU01		4822 277 21748	SLIDE SWITCH SSSS8-12B-12	SS01020900
XY01		4822 242 72066	CERAMIC VIB. CST8.0MHz	FQ08004010
			PY16-FRONT CIRCUIT BOARD	
			PY16-CAPACITORS	
CY01		4822 124 21901	ELECT 47µF 6.3V	EJ47600610
CY02		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
CY03		4822 126 11687	CER. 0.1µF +80 -20% 25V F	DK98104200
			PY16-RESISTORS CHIP	
RY01		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
RY02		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY04		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY05		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610
RY07		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
RY08		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
RY09		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY10		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY17		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RY18		4822 051 30471	470 Ω ±5% 1/16W	NN05471610
RY19		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RY20		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RY21		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RY22		4822 051 30105	1M Ω ±5% 1/16W	NN05105610
RY23		4822 051 30102	1k Ω ±5% 1/16W	NN05102610
RY30		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY31		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY32				
∫		4822 051 30101	100 Ω ±5% 1/16W	NN05101610
RY36				
			PY16-SEMICONDUCTORS	
DY01				
∫		9965 000 08222	L.E.D. NSCW100AT WHITE	HI10002980
DY04			LED	
QY01		9965 000 08223	IC NJU6450A LCD DRIVER	HC10215090
QY05		9965 000 08224	SEMICON.COMP DTC323TU	BA20080210
QY06		9965 000 08224	SEMICON.COMP DTC323TU	BA20080210
			PY16-MISCELLANEOUS	
JY01		9965 000 08233	JACK FH12-20S-0.5SH	YJ07009440
SY01				
∫		4822 276 14009	PUSH SWITCH SKQNAE	SP01013310
SY08			H/5MM 160GF	
VX01		9965 000 08225	DISPLAY UNIT LCD	HQ21202800
			PY26-CD KEY	
			CIRCUIT BOARD	
			PY26-RESISTORS CHIP	
RY51		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY52		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610
RY53		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY54		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
RY55		4822 116 83215	5.6k Ω ±5% 1/16W	NN05562610
RY56		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY57		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY58		4822 051 30563	56k Ω ±5% 1/16W	NN05563610
RY59		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
RY60		4822 116 83819	18k Ω ±5% 1/16W	NN05183610
			PY26-MISCELLANEOUS	
SY51				
∫		4822 276 14009	PUSH SWITCH SKQNAE	SP01013310
SY59			H/5MM 160GF	
			PY36-JOG SHUTTLE	
			CIRCUIT BOARD	
SY91		9965 000 05915	ROTARY SWITCH EC11B	SR03030030
			ENCODER	
			PY46-STAND BY SW	
			CIRCUIT BOARD	
DY05		4822 130 70023	L.E.D. SML-020MVTT89 LED	HI10096210
SY23		4822 276 14009	PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310
			PY56-IR SENSOR	
			CIRCUIT BOARD	
CY83		4822 124 21901	ELECT CAP. 47µF 6.3V	EJ47600610
RY83		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610
RY85		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610

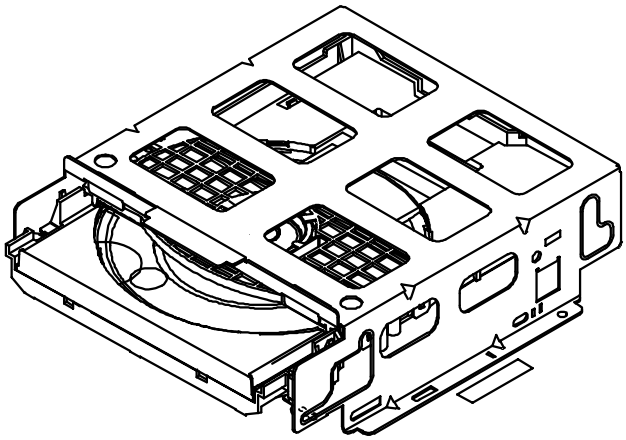
POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
ZY83		4822 130 11494	PHOTO UNIT IR SENSOR RPM6936-V4	HW10004210
			PY66-IR SENSOR CIRCUIT BOARD	
CY84		4822 124 21901	ELECT CAP. 47µF 6.3V	EJ47600610
RY84		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610
RY86		4822 051 30151	CHIP RES. 150 Ω ±5% 1/16W	NN05151610
ZY84		4822 130 11515	PHOTO UNIT RPM6936 IR RECEIVER 36KHz	HW10005210
			PY76-OPEN/CLOSE KEY CIRCUIT BOARD	
SY82		4822 276 14009	PUSH SWITCH SKQNAE H/5MM 160GF	SP01013310
			P816-POWER SUPPLY CIRCUIT BOARD	
			P816-CAPACITORS	
⚠ C819		9965 000 06706	CER. 0.01µF	DK17103910
⚠ C820		9965 000 06706	CER. 0.01µF	DK17103910
⚠ C821		9965 000 04981	ELECT 120µF 400V	EA12740070
⚠ C822		4822 126 13091	FILM 0.047µF 250V	DF16473640
⚠ C824		9965 000 04982	CER. 150pF 2KV	DK16151910
⚠ C825		9965 000 04980	CER. 470pF ±10% 250V	DK17471520
⚠ C826		9965 000 04980	CER. 470pF ±10% 250V	DK17471520
⚠ C827		9965 000 04982	CER. 150pF 2KV	DK16151910
⚠ C828		9965 000 04980	CER. 470pF ±10% 250V	DK17471520
C830		4822 124 80772	ELECT 47µF M 35V	OA47603520
C831		4822 121 42327	FILM 470pF J M 50V	DF15471350
C832		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C853		4822 124 22277	ELECT 470µF M 16V	OA47701620
C856		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C857		9965 000 06379	ELECT 2200µF 10V RJB	EF228010P0
C858		4822 124 41539	ELECT 47µF M 16V	OA47601620
C859		4822 124 41539	ELECT 47µF M 16V	OA47601620
C863		4822 124 41539	ELECT 47µF M 16V	OA47601620
C866		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C867		9965 000 06381	ELECT 1000µF 16V RJB	EF108016P0
C871		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
C872		9965 000 06382	ELECT 220µF 16V RJB	EF227016P0
C873		4822 124 41539	ELECT 47µF M 16V	OA47601620
C874		4822 124 41539	ELECT 47µF M 16V	OA47601620
C881		4822 124 41543	ELECT 1µF M 50V	OA10505020
C882		4822 122 30103	CER. 0.022µF 50V	DK18223310
C898		4822 122 40617	CER. 0.1µF +80 -20% 50V	DD38104010
			P816-RESISTORS	
⚠ R819		9965 000 00502	1M Ω ±5% 1W RCR60 L15	RC05105010
⚠ R820		4822 053 11823	METAL 82k Ω ±5% 2W	NK05823020
⚠ R821		4822 116 82107	METAL 68k Ω ±5% 3W	NK05683030
⚠ R822		4822 116 82107	METAL 68k Ω ±5% 3W	NK05683030
⚠ R823		9965 000 00402	METAL 0.47 Ω ±5% 2W	NL05472020
⚠ R825		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140
⚠ R826		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140
⚠ R830		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140
R884		4822 050 22212	2.21k Ω ±1% 1/6W	GM11622110
R886		9965 000 07401	0 Ω ±5% 1/6W	GD05000160
R889		4822 052 10151	150 Ω ±5% 1/6W	GG05151160
⚠ R890		4822 111 90967	FUSE 47 Ω ±5% 1/4W	NF05047140

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			P816-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : R827 R829 R851-R854 R861 R862 R871 R872 R873 R881 R883 R885 R888	
			P816-SEMICONDUCTORS	
⚠ D802		4822 130 32748	DIODE S1WB(A)60 30A 600V	HD20031290
⚠ D803		4822 130 81244	DIODE ERA22-10	HD20008130
⚠ D804		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D807		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
⚠ D856		4822 130 11074	DIODE RK46	HD20050080
D857		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
⚠ D866		9965 000 06383	DIODE RU4AM 600V 2.0A	HD20051080
⚠ D871		9965 000 00388	DIODE AG01 400V 0.7A	HD20049080
D872		4822 130 10667	ZENER DIODE 4.7V	HD30471000
⚠ D881		9965 000 06384	IC TL431 SHUNT REGULATOR	HC33036590
⚠ Q802		4822 130 10431	PHOTO UNIT COUPLER PC-123F2	HW10032320
⚠ Q825		9965 000 05142	IC STR-G6551 SWITCHING IC	HC10008080
⚠ Q851		9965 000 04991	IC SI-3050C +5V 5REG WITH SW.	HC10006080
⚠ Q852		4822 209 31631	IC NJM7805FA +5V	HC38905090
Q853		4822 130 60588	SEMICON.COMP DTC114ES/UN4211 10K 10K	BA20001000
Q854		4822 130 60588	SEMICON.COMP DTC114ES/UN4211 10K 10K	BA20001000
⚠ Q861		9965 000 04991	IC SI-3050C +5V 5REG WITH SW.	HC10006080
⚠ Q871		4822 209 14624	IC NJM7908FA	HC39908090
⚠ Q872		4822 130 62548	TRS. 2SB1185 E F	HT211852B0
Q875		4822 130 61227	SEMICON.COMP DTA114ES/UN4111 10K 10K	BA10001000
			P816-MISCELLANEOUS	
⚠ F820		4822 070 32001	FUSE 2A 250V BS LISTED	FS10200850
⚠ G815		9965 000 06706	CER. DE1607-1F 103M-KH	DK17103910
⚠ J801		9965 000 08227	JACK MAINS INLET 1P 2.5A 250V	YJ04002490
⚠ L820		4822 157 70398	CHOKE COIL LINE FILTER LF-4D-223 22MH	LC22260130
⚠ L831		9965 000 08229	MAINS TRANSF. SWITCHING	TS12900020
L856		9965 000 06388	CHOKE COIL 6.8µH PJ8R-6R8M	LC16820110
L867		9965 000 06389	CHOKE COIL 2.2µH LHLC06TB2R2M	LC12220190
L872		4822 157 62266	CHOKE COIL 10µH J%	LC11033900
⚠ S815		9965 000 05921	PUSH SWITCH ESB92S94B TV-5	SP01012480
			P826-AC OUTLET CIRCUIT BOARD	
⚠ J804	N1	9965 000 08228	JACK 1P AC OUTLET S2-770T-210	YJ04002500

Service Manual

MAR1250

CD Module



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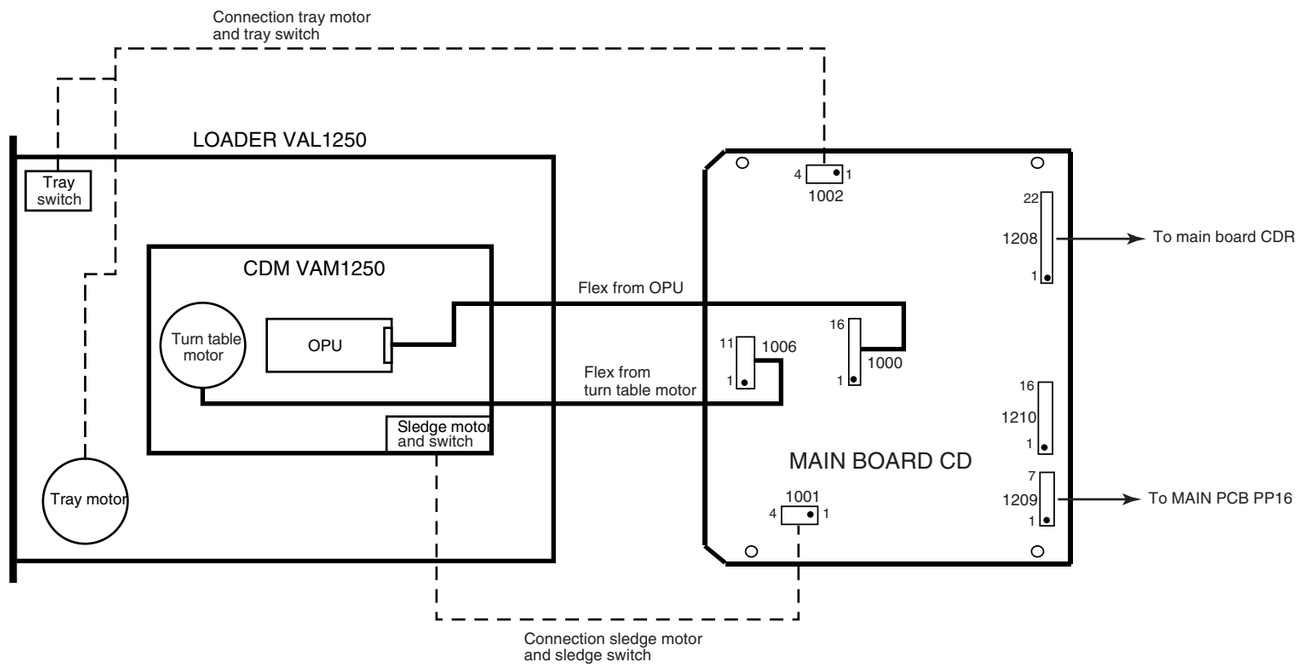
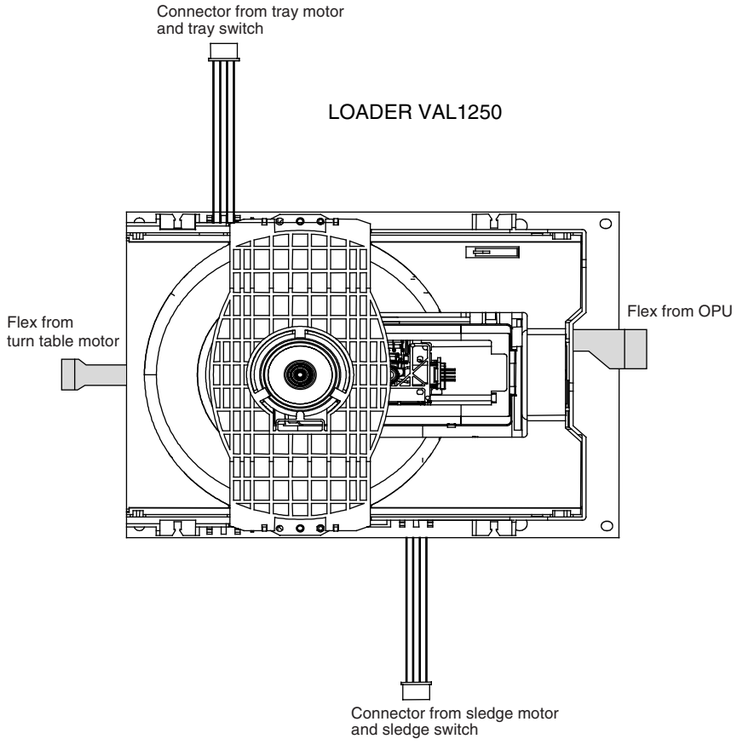
Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

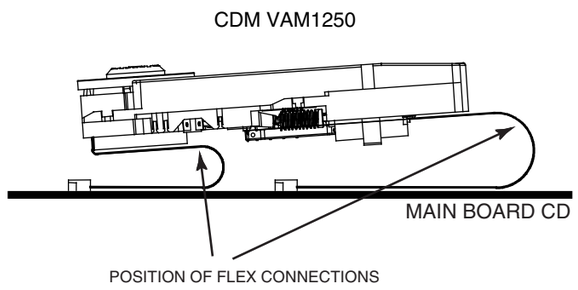
marantz®

MAR1250

2.1 WIRING DIAGRAM
CD LOADER VAL1250







CONNECTOR 1006

1	HALL +
2	W-
3	W+
4	V+
5	HALL-
6	U+
7	V-
8	U-
9	UCOIL
10	VCOIL
11	WCOIL

CONNECTOR 1000

1	VSUB
2	HFGND
3	VDD
4	RF
5	LDON
6	R2
7	R1
8	D4/D3
9	D2
10	D1
11	FTC
12	RW
13	FOC+
14	FOC-
15	RAD+
16	RAD-

CONNECTOR 1002

1	HOMESW
2	SGND
3	TRAY+
4	TRAY-

CONNECTOR 1001

1	HOMESW
2	SGND
3	SL-
4	SL+

CONNECTOR 1209

1	AUDIO R (RIGHT_CD)
2	GND
3	AUDIO L (LEFT_CD)
4	GND
5	DOBM5_CD (DOBM_CD)
6	GND
7	KILL

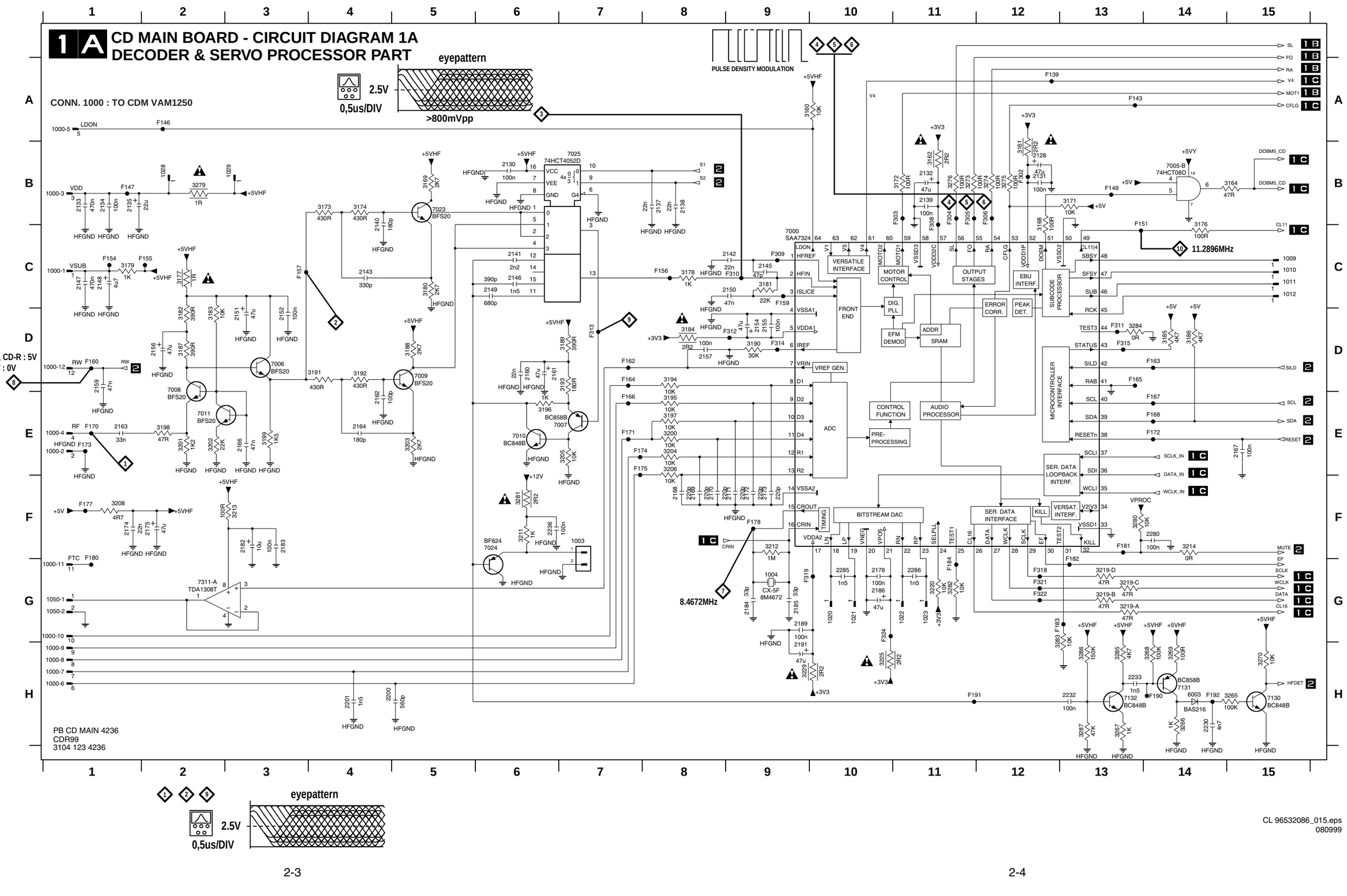
CONNECTOR 1208

1	GND
2	CRIN (SYS_CLK_8W)
3	KILL
4	AUDIO R (RIGHT_IN_CD)
5	GND
6	AUDIO L (LEFT_IN_CD)
7	DSA_RST (SYS_RESET)
8	DOBM (DOBM_CD)
9	GND
10	SCLK (I^2S_BCLK_CD)
11	GND
12	WCLK (I^2S_WS_CD)
13	DATA (I^2S_DATA_CD)
14	GND
15	+12V
16	+5V
17	GND
18	DSA_ACK (DSA_ACK_CD)
19	DSA_STROBE (DSA_STR_CD)
20	GND
21	DSA_DATA (DSA_DATA_CD)
22	GND

2.2 SCHEMATIC DIAGRAM

CD Diagram 1A

1000-1 C1	1000-7 H1	1020 G10				2148 C1	2159 D1	2169 F8	2183 F3	2232 H13	3164 B15	3178 C8	3187 D2	3196 E6	3205 E7	3219-C G13	3269 H14	3282 G11	7005 D3	7130 H15	F151 C13	F164 D7	F174 E7	F190 H14	F309 C9	F321 G12
1000-10 G1	1000-8 H1	1021 G10	2130 B6	2139 B11		2149 C6	2160 D6	2170 F8	2184 G9	2233 H13	3168 B12	3179 C1	3188 D5	3197 E8	3206 E8	3219-D G13	3270 H15	3283 G12	7007 E7	7131 H14	F154 C1	F165 D13	F175 E7	F191 H11	F310 C9	F322 G12
1000-11 G1	1000-9 H1	1022 G11	2131 B12	2140 C4		2150 C9	2161 D6	2171 F9	2185 G9	2236 F6	3169 B5	3180 C5	3189 D7	3198 E2	3208 F1	3220 G11	3273 B11	3284 D13	7008 E2	7132 H13	F155 C2	F166 E7	F177 F1	F192 H14	F311 D13	F324 G10
1000-12 D1	1003 F7	1023 G11	2132 B11	2141 C6		2151 D3	2162 E4	2172 F9	2186 G10	2280 F14	3171 B13	3181 C9	3190 D9	3199 E3	3211 F6	3225 H10	3274 B12	3285 H13	7009 D5	7311-A G2	F156 C8	F167 E14	F178 F9	F302 B12	F312 D9	
1000-2 E1	1004 G9	1028 B2	2133 B1	2142 C9		2152 D3	2163 E1	2173 F9	2189 G9	2285 G10	3172 B11	3182 D2	3191 D4	3200 E8	3212 F9	3229 H9	3275 B12	3286 H13	7010 E6	F139 A12	F157 C3	F168 E14	F180 G1	F303 B11	F313 D7	
1000-3 B1	1009 C15	1029 B3	2134 B1	2143 C4		2154 D9	2164 E4	2174 F1	2191 H9	2286 G11	3173 B4	3183 D2	3192 D4	3201 E2	3213 F3	3265 H15	3276 B11	3287 H13	7011 E2	F143 A13	F159 C9	F170 E1	F181 F13	F304 B11	F314 D9	
1000-4 E1	1010 C15	1050-1 G1	2135 B1	2145 C9		2155 D9	2166 E3	2175 F2	2200 H4	3160 A9	3174 B4	3184 D8	3193 D7	3202 E2	3214 F14	3266 H14	3279 B2	6003 H14	7023 B5	F146 A2	F160 D1	F171 E7	F182 G13	F305 B11	F315 D13	
1000-5 A1	1011 C15	1050-2 G1	2137 B8	2146 C6		2156 D2	2167 E14	2178 G10	2201 H4	3161 B12	3176 C14	3185 D14	3194 D8	3203 E5	3219-A G13	3267 H13	3280 F13	7000 C9	7024 F6	F147 B1	F162 D7	F172 E14	F183 G12	F306 B12	F318 G12	
1000-6 H1	1012 C15	2128 B12	2138 B8	2147 C1		2157 D8	2168 F8	2182 F3	2230 H14	3162 B11	3177 C2	3186 D14	3195 E8	3204 E8	3219-B G13	3268 H14	3281 F6	7005-B B14	7025 F7	F149 B13	F163 D14	F173 E1	F184 G11	F308 B11	F319 G9	



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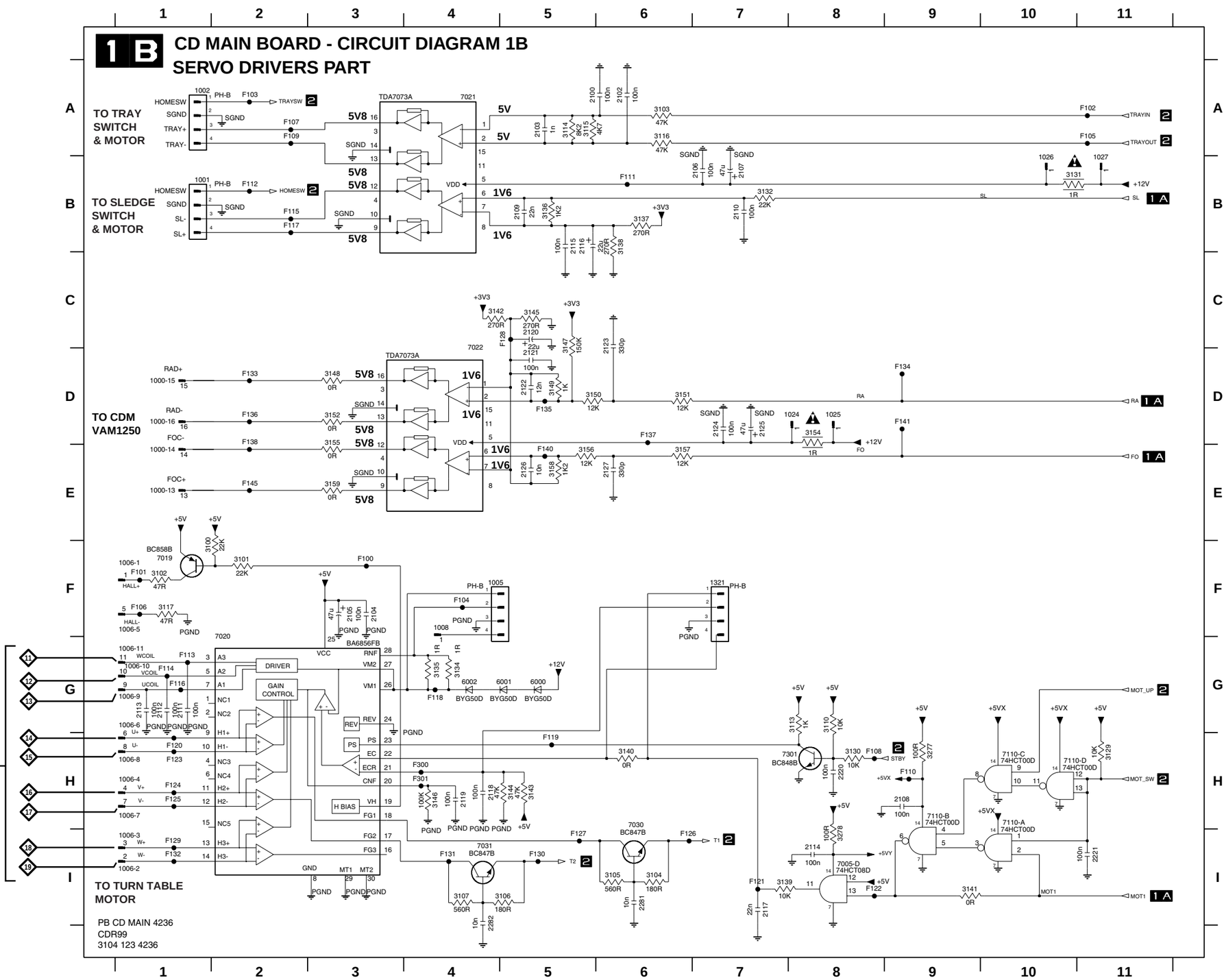
CD diagram 1B



Input conditions conn 1006 pin						Outputs conn 1006			Test points on driver		
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL_U	HALL_V	HALL_W
L	M	H	M	M	M	6V	0V	0V	0V	5V	
H	M	L	M	M	M	0V	6V	6V	5V	0V	
M	M	L	M	H	M	0V	6V	0V		0V	5V
M	M	H	M	L	M	6V	0V	6V		5V	0V
H	M	M	M	L	M	0V	0V	6V	5V		0V
L	M	M	M	H	M	6V	6V	0V	0V		5V

Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

1000-13 E1
1000-14 E1
1000-15 D1
1000-16 D1
1001 B1
1002 A1
1005 F5
1006-1 F1
1006-10 G1
1006-11 G1
1006-2 I1
1006-3 I1
1006-4 H1
1006-5 F1
1006-6 G1
1006-7 H1
1006-8 H1
1006-9 G1
1008 F4
1024 D8
1025 D8
1026 B10
1027 B11
1321 F7
2100 A5
2102 A6
2103 A5
2104 F3
2105 F3
2106 B7
2107 B7
2108 H9
2109 B5
2110 B7
2111 G1
2112 G1
2113 G1
2114 I8
2115 B5
2116 B5
2117 I7
2118 H4
2119 H4
2120 C5
2121 D5
2122 D5
2123 C6
2124 D7
2125 D7
2126 E5
2127 E6
2220 H8
2221 I11
2281 I6
2282 I4
3100 F1
3101 F2
3102 F1
3103 A6
3104 I6
3105 I6
3106 I5
3107 I4
3110 G8
3113 G8
3114 A5
3115 A5
3116 A6
3117 F1
3129 H11
3130 H8
3131 B10
3132 B7
3134 G4
3135 G4
3136 B5
3137 B6
3138 B6
3139 I7
3140 H6
3141 I9
3142 C4
3143 H5
3144 H5
3145 C5
3146 H4
3147 C5
3148 D3
3149 D5
3150 D5
3151 D6
3152 D3
3154 D8
3155 E3
3156 E5
3157 E6
3158 E5
3159 E3
3277 H9
3278 I8
6000 G5
6001 G5
6002 G4
7005-D I8
7019 F1
7020 G2
7021 A4
7022 D4
7030 H6
7031 I4
7110-A H10
7110-B H9
7110-C H10
7110-D H11
7301 H8

F100 F3
F101 F1
F102 A11
F103 A2
F104 F4
F105 A11
F106 F1
F107 A2
F108 H8
F109 A2
F110 H9
F111 B6
F112 B2
F113 G1
F114 G1
F115 B2
F116 G1
F117 B2
F118 G4
F119 H5
F120 H1
F121 I7
F122 I8
F123 H1
F124 H1
F125 H1
F126 I6
F127 I5
F128 C5
F129 I1
F130 I5
F131 I4
F132 I1
F133 D2
F134 D9
F135 D5
F136 D2
F137 D6
F138 D2
F140 E5
F141 D9
F145 E2
F300 H4
F301 H4

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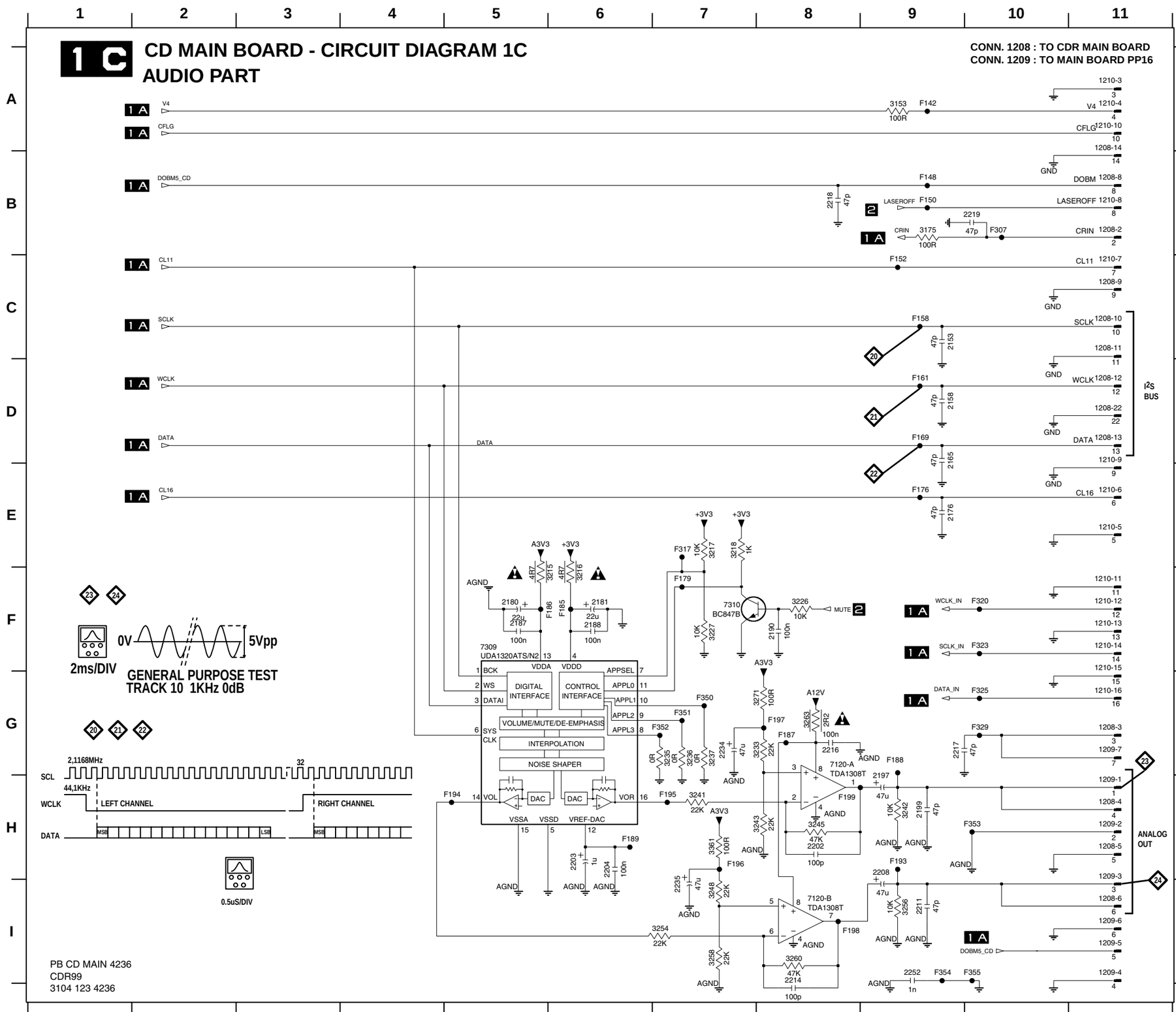
CD diagram 1C

1 C CD MAIN BOARD - CIRCUIT DIAGRAM 1C
AUDIO PART

CONN. 1208 : TO CDR MAIN BOARD
CONN. 1209 : TO MAIN BOARD PP16



PB CD MAIN 4236
CDR99
3104 123 4236

1208-10 C11
1208-11 C11
1208-12 D11
1208-13 D11
1208-14 A11
1208-2 B11
1208-22 D11
1208-3 G11
1208-4 H11
1208-5 H11
1208-6 I11
1208-8 B11
1208-9 C11
1209-1 H11
1209-2 H11
1209-3 H11
1209-4 I11
1209-5 I11
1209-6 I11
1209-7 G11
1210-10 A11
1210-11 F11
1210-12 F11
1210-13 F11
1210-14 F11
1210-15 F11
1210-16 G11
1210-3 A11
1210-4 A11
1210-5 E11
1210-6 E11
1210-7 C11
1210-8 B11
1210-9 D11
2153 C9
2158 D9
2165 D9
2176 E9
2180 F5
2181 F6
2187 F5
2188 F6
2190 F8
2197 H9
2199 H9
2202 H8
2203 H6
2204 H6
2208 H9
2211 I9
2214 I8
2216 G8
2217 G9
2218 B8
2219 B10
2234 G7
2235 I7
2252 I9
3153 A9
3175 B9
3215 F5
3216 F6
3217 E7
3218 E7
3226 F8
3227 F7
3233 G8
3235 G7
3236 G7
3237 G7
3241 H7
3242 H9
3243 H8
3245 H8
3248 I7
3254 I7
3256 I9
3258 I7
3260 I8
3263 G8
3271 G8
3361 H7
7120-A G8
7120-B I8
7309 F5
7310 F7
F142 A9
F148 B9
F150 B9
F152 C9
F158 C9
F161 D9
F169 D9
F176 E9
F179 F7
F185 F6
F186 F5
F187 G8
F188 G9
F189 H6
F193 H9
F194 H5
F195 H7
F196 H7
F197 G8
F198 I8
F199 H8
F307 B10
F317 E7
F320 F10
F323 F10
F325 G10
F329 G10
F350 G7
F351 G7
F352 G7
F353 H10
F354 I9
F355 I10

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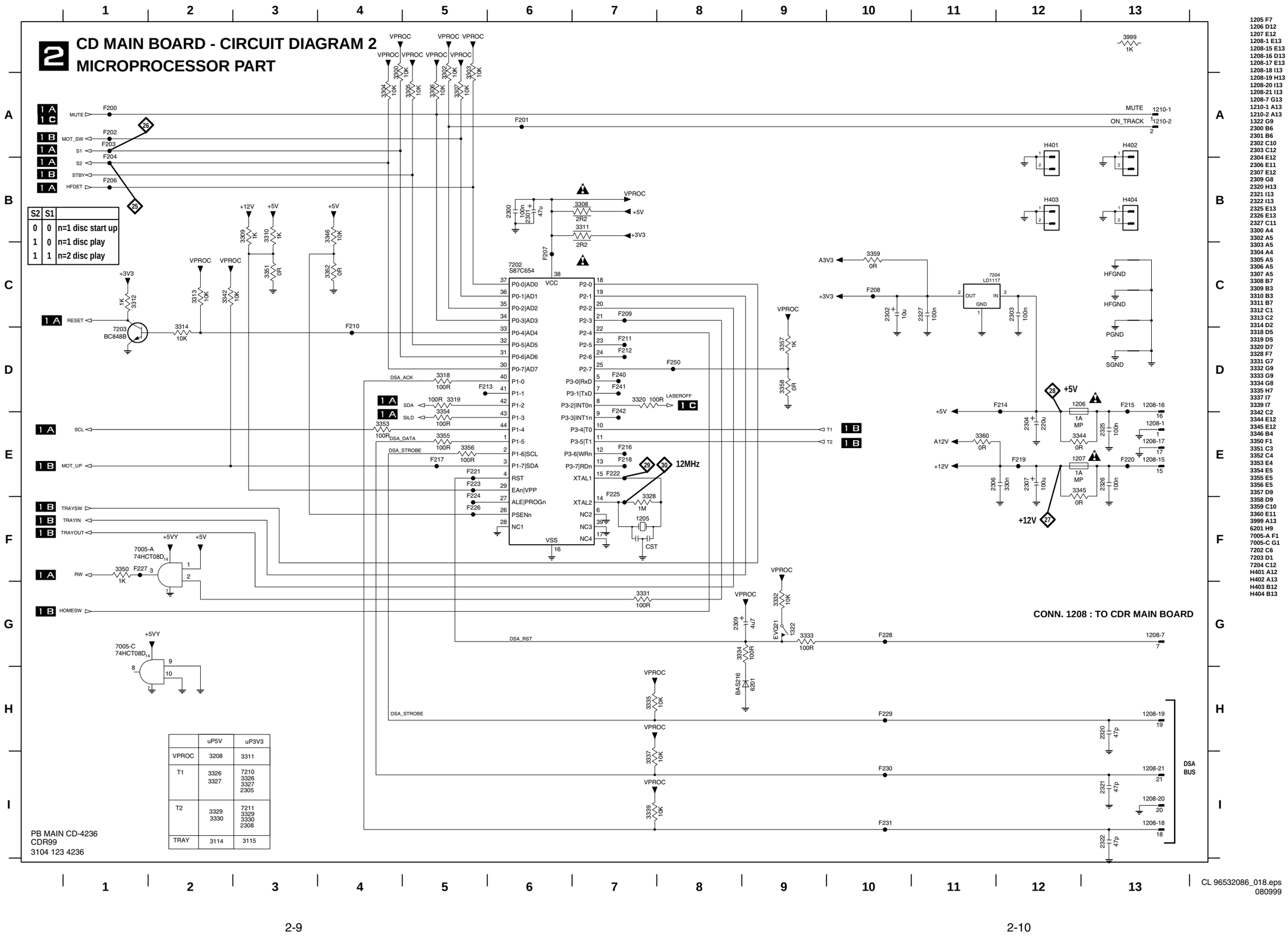
CD diagram 2

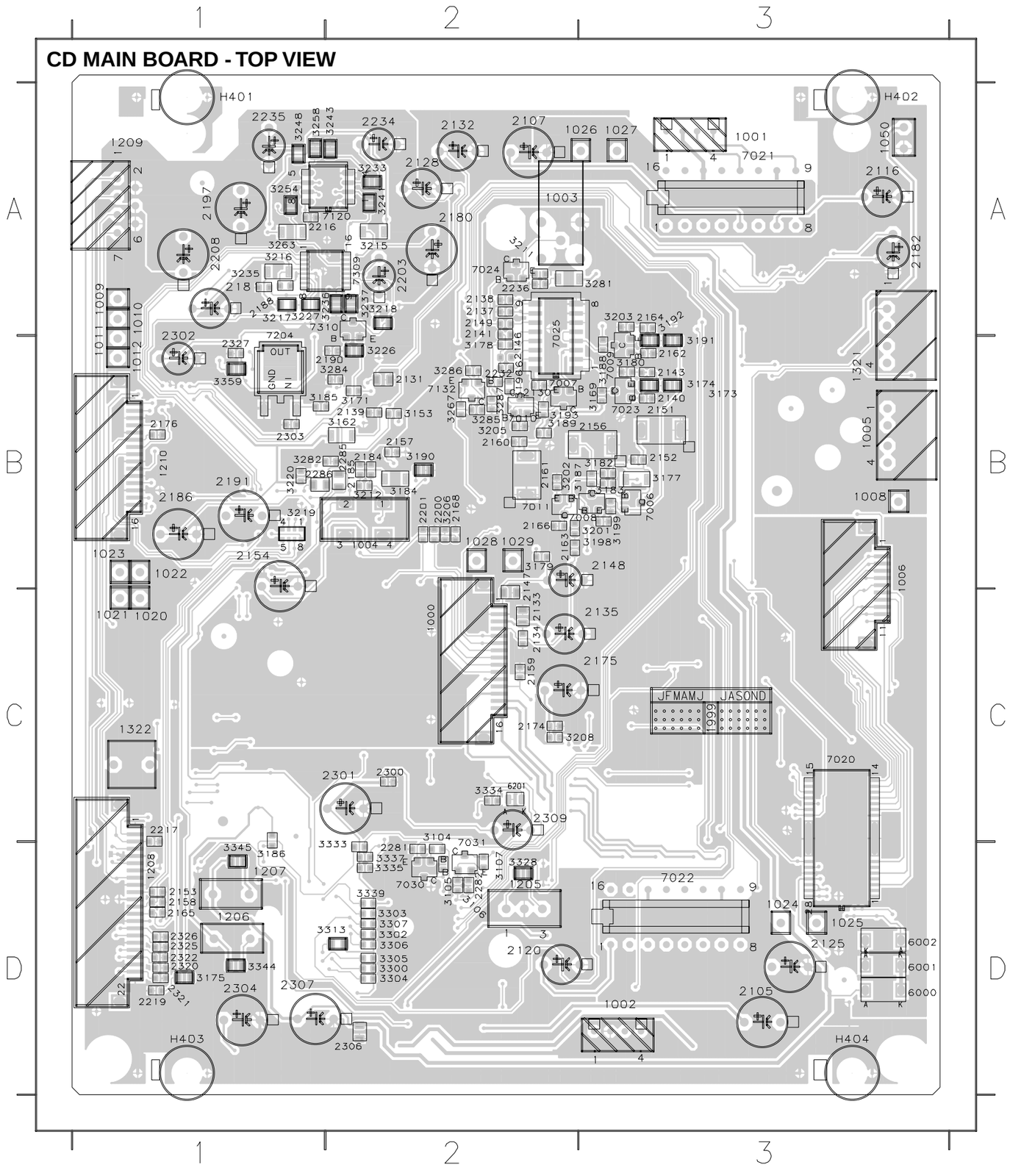


	uP5V	uP3V3
VPROC	3208	3311
T1	3326 3327	7210 3326 3327 2305
T2	3329 3330	7211 3329 3330 2308
TRAY	3114	3115

1205 F7
1206 D12
1207 E12
1208-1 E13
1208-15 E13
1208-16 D13
1208-17 E13
1208-18 I13
1208-19 H13
1208-20 I13
1208-21 I13
1208-7 G13
1210-1 A13
1210-2 A13
1322 G9
2300 B6
2301 B6
2302 C10
2303 C12
2304 E12
2306 E11
2307 E12
2309 G8
2320 H13
2321 I13
2322 I13
2325 E13
2326 E13
2327 C11
3300 A4
3302 A5
3303 A5
3304 A4
3305 A5
3306 A5
3307 A5
3308 B7
3309 B3
3310 B3
3311 B7
3312 C1
3313 C2
3314 D2
3318 D5
3319 D5
3320 D7
3328 F7
3331 G7
3332 G9
3333 G9
3334 G8
3335 H7
3337 I7
3339 I7
3342 C2
3344 E12
3345 E12
3346 B4
3350 F1
3351 C3
3352 C4
3353 E4
3354 E5
3355 E5
3356 E5
3357 D9
3358 D9
3359 C10
3360 E11
3999 A13
6201 H9
7005-A F1
7005-C G1
7202 C6
7203 D1
7204 C12
H401 A12
H402 A13
H403 B12
H404 B13

2.3 PARTS LOCATION

CD top



1000	C2	2208	A1	3285	B2
1001	A3	2216	A1	3286	B2
1002	D3	2217	C1	3287	B2
1003	A2	2219	D1	3300	D2
1004	B2	2232	B2	3302	D2
1005	B3	2234	A2	3303	D2
1006	B3	2235	A1	3304	D2
1008	B3	2236	A2	3305	D2
1009	A1	2281	D2	3306	D2
1010	A1	2282	D2	3307	D2
1011	B1	2285	B2	3313	D2
1012	B1	2286	B1	3328	D2
1020	C1	2300	C2	3333	D2
1021	C1	2301	C2	3334	C2
1022	B1	2302	B1	3335	D2
1023	B1	2303	B1	3337	D2
1024	D3	2304	D1	3339	D2
1025	D3	2306	D2	3344	D1
1026	A3	2307	D1	3345	D1
1027	A3	2309	C2	3359	B1
1028	B2	2320	D1	6000	D3
1029	B2	2321	D1	6001	D3
1050	A3	2322	D1	6002	D3
1205	D2	2325	D1	6201	C2
1206	D1	2326	D1	7006	B3
1207	D1	2327	B1	7007	B2
1208	D1	3104	C2	7008	B3
1209	A1	3105	D2	7009	B3
1210	B1	3106	D2	7010	B2
1321	B3	3107	D2	7011	B2
1322	C1	3153	B2	7020	C3
2105	D3	3162	B2	7021	A3
2107	A2	3169	B3	7022	D3
2116	A3	3171	B2	7023	B3
2120	D2	3173	B3	7024	A2
2125	D3	3174	B3	7025	A2
2128	A2	3175	D1	7030	D2
2130	B2	3177	B3	7031	D2
2131	B2	3178	B2	7120	A2
2132	A2	3179	B2	7132	B2
2133	C2	3180	B3	7204	A1
2134	C2	3182	B3	7309	A2
2135	C3	3183	B3	7310	A1
2137	A2	3184	B2		
2138	A2	3185	B1		
2139	B2	3186	D1		
2140	B3	3187	B2		
2141	A2	3188	B3		
2143	B3	3189	B2		
2144	B2	3190	B2		
2146	B2	3191	B3		
2147	B2	3192	A3		
2148	B3	3193	B2		
2149	A2	3196	B2		
2151	B3	3198	B3		
2152	B3	3199	B3		
2153	D1	3201	B3		
2154	B1	3202	B2		
2156	B3	3203	A3		
2157	B2	3205	B2		
2158	D1	3206	B2		
2159	C2	3208	C3		
2160	B2	3211	A2		
2161	B2	3212	B2		
2162	B3	3215	A2		
2163	B2	3216	A1		
2164	A3	3217	A1		
2165	D1	3218	A2		
2166	B2	3219	B1		
2168	B2	3220	B1		
2174	C2	3226	B2		
2175	C3	3227	A1		
2176	B1	3233	A2		
2180	A2	3235	A1		
2181	A1	3236	A2		
2182	A3	3237	A2		
2184	B2	3241	A2		
2185	B2	3243	A2		
2186	B1	3248	A1		
2188	A1	3254	A1		
2190	B2	3258	A1		
2191	B1	3263	A1		
2197	A1	3267	B2		
2200	B2	3281	A3		
2201	B2	3282	B1		
2203	A2	3284	B2		

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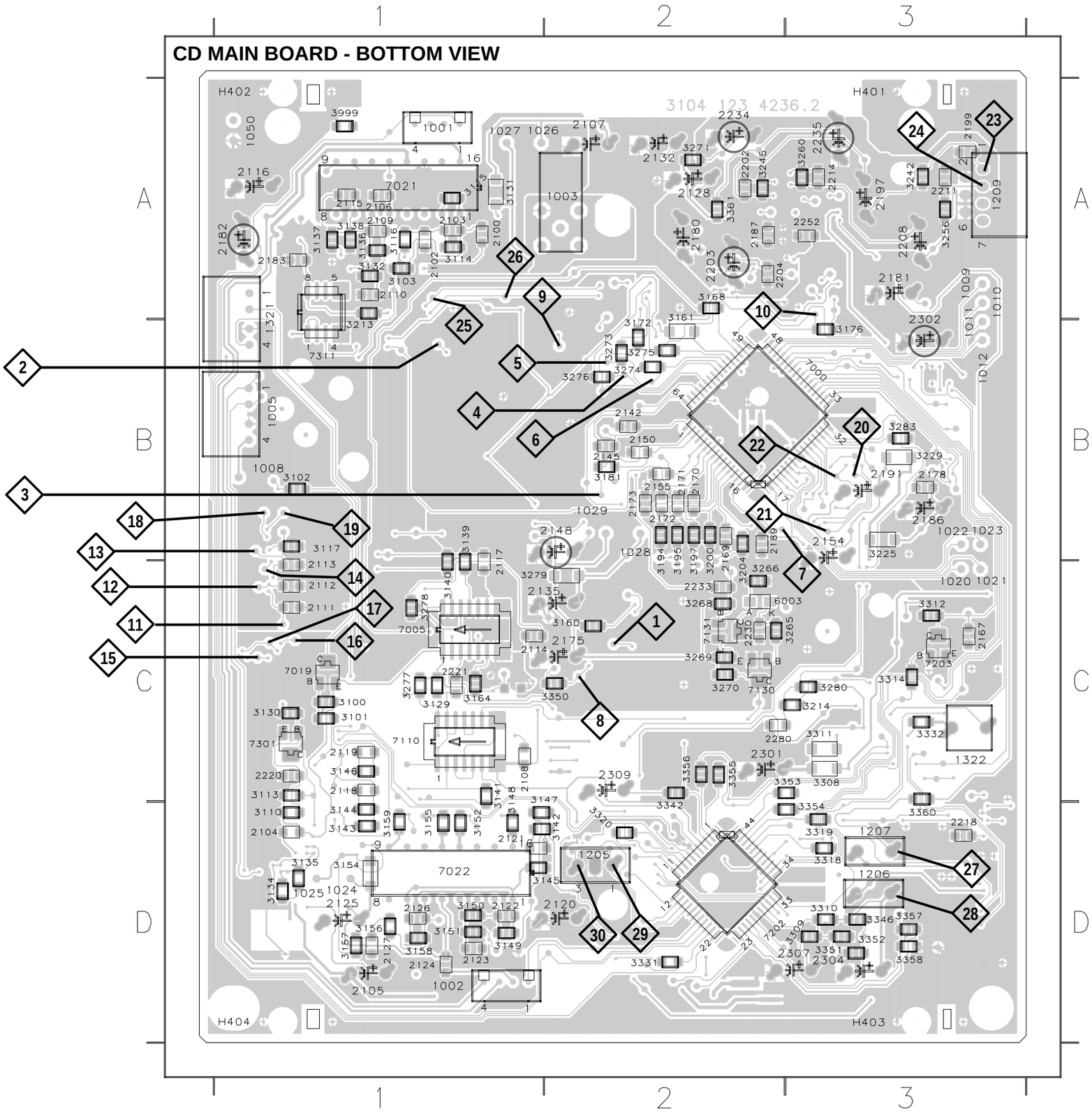
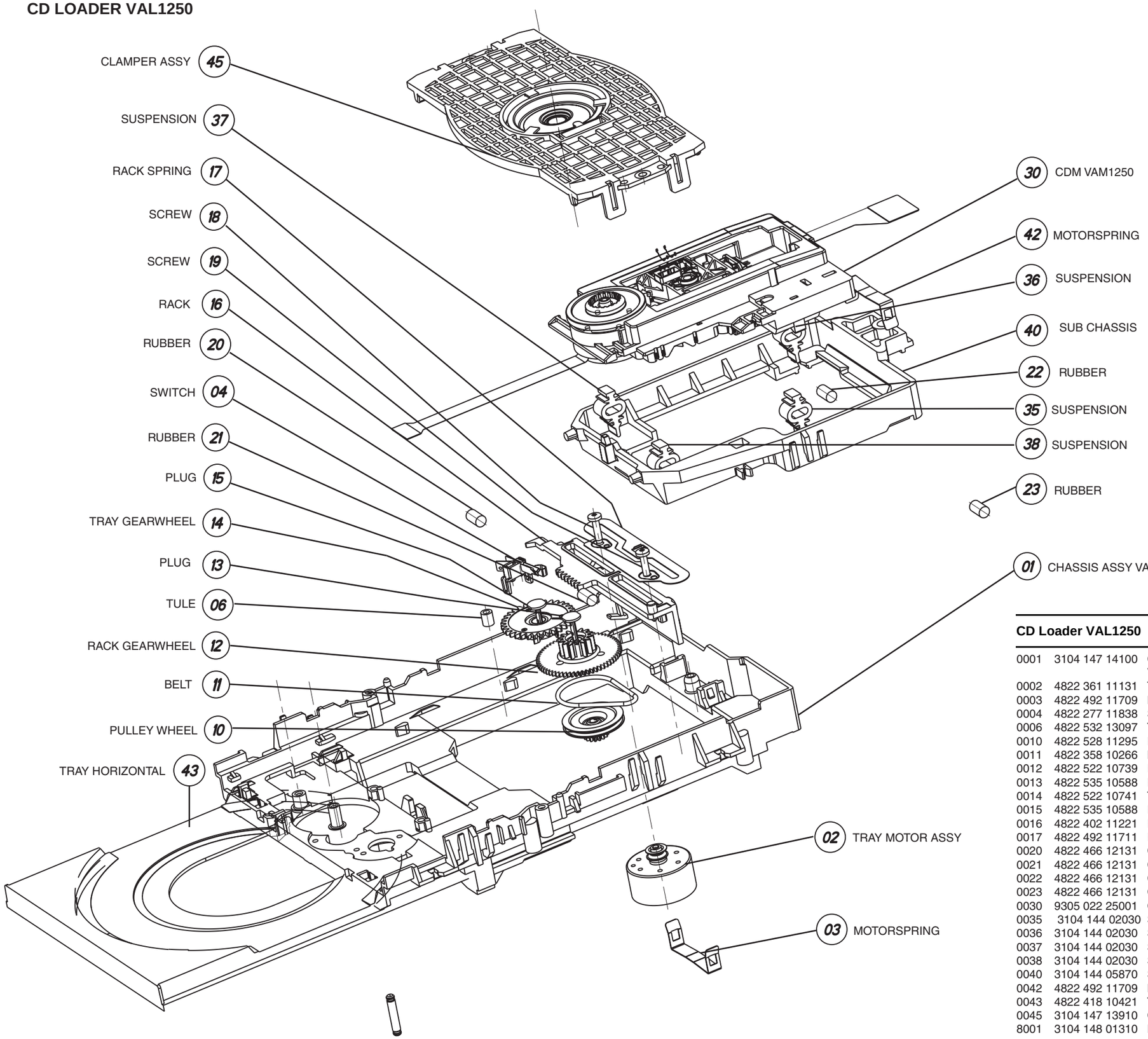
CD bottom



2100	A1	3158	D1
2102	A1	3159	D1
2103	A1	3160	C2
2104	D1	3161	A2
2106	A1	3164	C1
2108	C1	3168	A2
2109	A1	3172	B2
2110	A1	3176	B3
2111	C1	3181	B2
2112	C1	3194	C2
2113	C1	3195	C2
2114	C1	3197	C2
2115	A1	3200	C2
2117	C1	3204	C2
2118	C1	3213	B1
2119	C1	3214	C3
2121	D1	3225	B3
2122	D1	3229	B3
2123	D1	3242	A3
2124	D1	3245	A2
2126	D1	3256	A3
2127	D1	3260	A3
2136	C1	3265	C3
2142	B2	3266	C2
2145	B2	3268	C2
2150	B2	3269	C2
2155	B2	3270	C2
2167	C3	3271	A2
2169	B2	3273	B2
2170	B2	3274	B2
2171	B2	3275	B2
2172	B2	3276	B2
2173	B2	3277	C1
2178	B3	3278	C1
2183	A1	3279	C1
2187	A2	3280	C3
2189	B2	3283	B3
2199	A3	3308	C3
2202	A2	3309	D3
2204	A2	3310	D3
2211	A3	3311	C3
2214	A3	3312	C3
2218	D3	3314	C3
2220	C1	3318	D3
2221	C1	3319	D3
2230	C2	3320	D2
2233	C2	3331	D2
2252	A3	3332	C3
2280	C2	3342	D2
3100	C1	3346	D3
3101	C1	3350	C2
3102	B1	3351	D3
3103	A1	3352	D3
3110	D1	3353	C3
3113	C1	3354	D3
3114	A1	3355	C2
3115	A1	3356	C2
3116	A1	3357	D3
3117	B1	3358	D3
3129	C1	3360	D3
3130	C1	3361	A2
3131	A1	3999	A1
3132	A1	6003	C3
3134	D1	7000	B3
3135	D1	7005	C1
3136	A1	7019	C1
3137	A1	7110	C1
3138	A1	7130	C2
3139	B1	7131	C2
3140	C1	7202	D2
3141	C1	7203	C3
3142	D2	7301	C1
3143	D1	7311	B1
3144	D1		
3145	D2		
3146	C1		
3147	C2		
3148	C1		
3149	D1		
3150	D1		
3151	D1		
3152	D1		
3154	D1		
3155	D1		
3156	D1		
3157	D1		

CL 96532086_020.eps
080999

2.4 EXPLODED VIEW
CD LOADER VAL1250



CD Loader VAL1250

0001	3104 147 14100	CHASSIS ASSY LOADER VAL 1250
0002	4822 361 11131	TRAY MOTOR ASSY
0003	4822 492 11709	MOTOR SPRING
0004	4822 277 11838	SWITCH
0006	4822 532 13097	TULE
0010	4822 528 11295	PULLEY WHEEL
0011	4822 358 10266	BELT, DRIVING
0012	4822 522 10739	RACK GEAR WHEEL
0013	4822 535 10588	PIN, PLASTIC
0014	4822 522 10741	TRAY GEAR WHEEL
0015	4822 535 10588	PIN, PLASTIC
0016	4822 402 11221	RACK
0017	4822 492 11711	RACK SPRING
0020	4822 466 12131	CUSHION RUBBER
0021	4822 466 12131	CUSHION RUBBER
0022	4822 466 12131	CUSHION RUBBER
0023	4822 466 12131	CUSHION RUBBER
0030	9305 022 25001	CDM VAM 1250
0035	3104 144 02030	SUSPENSION
0036	3104 144 02030	SUSPENSION
0037	3104 144 02030	SUSPENSION
0038	3104 144 02030	SUSPENSION
0040	3104 144 05870	SUB-CHASIS
0042	4822 492 11709	MOTOR SPRING
0043	4822 418 10421	TRAY HORIZONTAL
0045	3104 147 13910	CLAMPER ASSY VAL 1250
8001	3104 148 01310	LED ASSY 4P

2.5 ELECTRICAL PARTS LIST

CD Main Board

Miscellaneous

1000	2422 025 11704	CON BM H 16P F 1.00 FFC 0.3 R
1004	2422 543 00896	RES XTL SM 8M4672 30P CX-5F R
1006	4822 267 51454	CONN. 11P FEMALE
1205	5322 242 73686	CST12,00MTW-TF01
1206	4822 252 51173	19398E1(1,000A)
1207	4822 252 51173	19398E1(1,000A)
1208	4822 267 60409	CONN 22P FEMALE
1209	4822 265 30987	BMT 7SR>CBL0,3-1,25
1210	2422 025 11704	CON BM H 16P F 1.00 FFC 0.3 R

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2100	4822 126 14585	100nF 10% 50V
2102	4822 126 14585	100nF 10% 50V
2103	5322 122 31647	1nF 10% 63V
2104	4822 126 14585	100nF 10% 50V
2105	4822 124 81286	47µF 20% 16V
2106	4822 126 14585	100nF 10% 50V
2107	4822 124 81286	47µF 20% 16V
2109	5322 122 32654	22nF 10% 63V
2110	4822 126 14585	100nF 10% 50V
2111	4822 126 14585	100nF 10% 50V
2112	4822 126 14585	100nF 10% 50V
2113	4822 126 14585	100nF 10% 50V
2114	4822 126 14585	100nF 10% 50V
2115	4822 126 14585	100nF 10% 50V
2116	4822 124 41796	22µF 20% 16V
2117	5322 122 32654	22nF 10% 63V
2118	4822 126 14585	100nF 10% 50V
2119	4822 126 14585	100nF 10% 50V
2120	4822 124 41796	22µF 20% 16V
2121	4822 126 14585	100nF 10% 50V
2122	4822 126 12104	12nF 5% 50V
2123	5322 122 31863	63V 330pF PM5
2124	4822 126 14585	100nF 10% 50V
2125	4822 124 81286	47µF 20% 16V
2126	5322 122 34098	10nF 10% 63V
2127	5322 122 31863	63V 330pF PM5
2128	4822 124 80483	47µF 20% 6.3V
2130	4822 126 14305	100nF 10% 16V 0603
2131	4822 126 14585	100nF 10% 50V
2132	4822 124 80483	47µF 20% 6.3V
2133	4822 126 13482	470nF 80/20% 16V
2134	4822 126 14305	100nF 10% 16V 0603
2135	4822 124 41796	22µF 20% 16V
2137	4822 126 14494	22nF 10% 25V 0603
2138	4822 126 14494	22nF 10% 25V 0603
2139	4822 126 14305	100nF 10% 16V 0603
2140	4822 126 14508	180pF 5% 50V 0603
2141	4822 126 14238	0603 50V 2N2 COL R
2142	5322 122 32654	22nF 10% 63V
2143	4822 126 14241	0603 50V 330P COL R
2145	4822 126 13692	47pF 1% 63V
2146	4822 126 14247	0603 50V 1N5 COL R
2147	4822 126 13482	470nF 80/20% 16V
2148	4822 124 22726	4.7µF 35V
2149	3198 016 36810	0603 25V 680P COL R
2150	4822 126 12105	50V 33nF PM5
2151	5322 124 11919	47µF 20% 6.3V
2152	4822 126 14305	100nF 10% 16V 0603
2153	4822 122 33777	47pF 5% 63V
2154	4822 124 81286	47µF 20% 16V
2155	4822 126 14585	100nF 10% 50V
2156	5322 124 11919	47µF 20% 6.3V
2157	4822 126 14305	100nF 10% 16V 0603
2158	4822 122 33777	47pF 5% 63V
2159	3198 017 34730	0603 16V 47nF COL
2160	4822 126 14494	22nF 10% 25V 0603
2161	5322 124 11919	47µF 20% 6.3V
2162	4822 122 31765	100pF 2% 63V
2163	4822 126 14549	33nF 16V O6O3
2164	4822 126 14508	180pF 5% 50V 0603
2165	4822 122 33777	47pF 5% 63V
2166	3198 017 34730	0603 16V 47nF COL
2167	4822 126 14585	100nF 10% 50V
2168	4822 126 13883	220pF 5% 50V
2169	5322 126 10794	220pF 5% 63V
2170	5322 126 10794	220pF 5% 63V
2171	5322 126 10794	220pF 5% 63V
2172	5322 126 10794	220pF 5% 63V
2173	5322 126 10794	220pF 5% 63V
2174	4822 126 14494	22nF 10% 25V 0603
2175	4822 124 81286	47µF 20% 16V
2176	4822 122 33777	47pF 5% 63V
2178	4822 126 14585	100nF 10% 50V
2180	4822 124 41796	22µF 20% 16V
2181	4822 124 41796	22µF 20% 16V
2184	4822 126 14225	56pF 5% 50V 0603
2185	4822 126 14225	56pF 5% 50V 0603
2186	4822 124 81286	47µF 20% 16V
2187	4822 126 14585	100nF 10% 50V
2188	4822 126 14305	100nF 10% 16V 0603
2189	4822 126 14585	100nF 10% 50V
2191	4822 124 81286	47µF 20% 16V
2197	4822 124 81286	47µF 20% 16V
2199	4822 126 13692	47pF 1% 63V
2200	4822 126 14249	560pF 10% 50V CASE0603
2201	4822 126 14247	0603 50V 1N5 COL R
2202	5322 122 32531	100pF 5% 50V
2203	4822 124 22726	4.7µF 35V
2204	4822 126 14585	100nF 10% 50V
2208	4822 124 81286	47µF 20% 16V
2211	4822 126 13692	47pF 1% 63V
2214	5322 122 32531	100pF 5% 50V
2216	4822 126 14305	100nF 10% 16V 0603
2217	4822 122 33777	47pF 5% 63V
2218	4822 126 13692	47pF 1% 63V
2220	4822 126 14585	100nF 10% 50V
2230	5322 126 10223	4.7nF 10% 63V
2232	4822 126 14305	100nF 10% 16V 0603
2233	5322 122 31865	1.5nF 10% 63V
2234	4822 124 12362	47µF 4V 20%
2235	4822 124 12362	47µF 4V 20%
2252	5322 122 31647	1nF 10% 63V
2280	4822 126 14585	100nF 10% 50V
2285	5322 122 31865	1.5nF 10% 63V
2286	5322 122 31865	1.5nF 10% 63V
2300	4822 126 14305	100nF 10% 16V 0603
2301	4822 124 81286	47µF 20% 16V
2302	4822 124 11947	10µF 20% 16V
2303	4822 126 14305	100nF 10% 16V 0603
2304	4822 124 40196	220µF 20% 16V
2306	4822 126 12102	330nF 10% 16V
2307	4822 124 40207	100µF 20% 25V
2320	4822 122 33777	47pF 5% 63V
2321	4822 122 33777	47pF 5% 63V
2322	4822 122 33777	47pF 5% 63V
2325	4822 126 14305	100nF 10% 16V 0603
2326	4822 126 14305	100nF 10% 16V 0603
2327	4822 126 14305	100nF 10% 16V 0603

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3100	4822 051 20223	22k 5% 0.1W
3101	4822 051 20223	22k 5% 0.1W
3102	4822 051 20479	47Ω 5% 0.1W
3103	4822 117 10834	47k 1% 0.1W
3104	3198 021 90031	0Ω JMP 0603
3105	3198 021 90031	0Ω JMP 0603
3106	3198 021 90031	0Ω JMP 0603
3107	3198 021 90031	0Ω JMP 0603
3113	4822 051 10102	1k 2% 0.25W
3114	4822 051 20822	8k2 5% 0.1W
3115	4822 051 20472	4k7 5% 0.1W
3116	4822 117 10834	47k 1% 0.1W
3117	4822 051 20479	47Ω 5% 0.1W
3130	4822 117 10833	10k 1% 0.1W
3131⚠	4822 117 11151	1Ω 5%
3132	4822 051 20223	22k 5% 0.1W
3134	4822 051 20108	1Ω 5% 0.1W
3135	4822 051 20108	1Ω 5% 0.1W
3136	4822 051 20122	1k2 5% 0.1W
3137	4822 117 11504	270Ω 1% 0.1W
3138	4822 117 11504	270Ω 1% 0.1W
3139	4822 117 10833	10k 1% 0.1W
3140	4822 051 20008	0Ω jumper . (0805)
3141	4822 051 20008	0Ω jumper . (0805)
3142	4822 117 11504	270Ω 1% 0.1W
3143	4822 117 10834	47k 1% 0.1W
3144	4822 117 10834	47k 1% 0.1W
3145	4822 117 11504	270Ω 1% 0.1W
3146	4822 117 10837	100k 1% 0.1W
3148	4822 051 20008	0Ω jumper . (0805)
3149	4822 051 10102	1k 2% 0.25W
3150	4822 117 11383	12k 1% 0.1W
3151	4822 117 11383	12k 1% 0.1W
3152	4822 051 20008	0Ω jumper . (0805)
3153	4822 051 30101	100Ω 5% 0.062W
3154⚠	4822 117 11151	1Ω 5%
3155	4822 051 20008	0Ω jumper . (0805)
3156	4822 117 11383	12k 1% 0.1W
3157	4822 117 11383	12k 1% 0.1W
3158	4822 051 20122	1k2 5% 0.1W
3159	4822 051 20008	0Ω jumper . (0805)
3160	4822 117 10833	10k 1% 0.1W
3161⚠	4822 117 11748	2Ω2 1206 5% FUSE
3162⚠	4822 117 11748	2Ω2 1206 5% FUSE
3164	4822 051 20479	47Ω 5% 0.1W
3168	4822 051 20101	100Ω 5% 0.1W
3169	4822 051 30272	2k7 5% 0.062W
3171	4822 051 30103	10k 5% 0.062W
3172	4822 051 20101	100Ω 5% 0.1W
3173	4822 117 11452	430Ω 1% 0.1W
3174	4822 117 11452	430Ω 1% 0.1W
3176	4822 051 20101	100Ω 5% 0.1W
3177⚠	4822 117 11151	1Ω 5%
3178	4822 051 30102	1k 5% 0.062W
3179	4822 051 30102	1k 5% 0.062W
3180	4822 051 30272	2k7 5% 0.062W
3181	4822 051 20223	22k 5% 0.1W
3182	4822 051 30391	390Ω 5% 0.062W
3183	4822 051 30103	10k 5% 0.062W
3184⚠	4822 117 11748	2Ω2 1206 5% FUSE
3185	4822 051 30472	4k7 5% 0.062W
3186	4822 051 30472	4k7 5% 0.062W
3187	4822 051 30391	390Ω 5% 0.062W
3188	4822 051 30272	2k7 5% 0.062W
3189	4822 051 30391	390Ω 5% 0.062W
3190	4822 117 11456	30k 1% 0.1W
3191	4822 117 11452	430Ω 1% 0.1W
3192	4822 117 11452	430Ω 1% 0.1W
3193	4822 051 30181	180Ω 5% 0.062W
3194	4822 051 20008	0Ω jumper . (0805)
3195	4822 051 20008	0Ω jumper . (0805)
3196	4822 051 30102	1k 5% 0.062W
3197	4822 117 10833	10k 1% 0.1W
3198	4822 051 30479	47Ω 5% 0.062W
3199	4822 051 30152	1k5 5% 0.062W
3200	4822 117 10833	10k 1% 0.1W
3201	4822 117 11817	1k2 1% 1/16W
3202	4822 051 30223	22k 5% 0.062W
3203	4822 051 30272	2k7 5% 0.062W
3204	4822 051 20008	0Ω jumper . (0805)
3205	4822 051 30103	10k 5% 0.062W
3206	4822 051 30008	0Ω jumper
3208	4822 117 13608	4.7Ω 5% 0603 0.0016W
3212	4822 051 30105	1M 5% 0.062W
3214	4822 051 20008	0Ω jumper . (0805)
3215⚠	4822 117 11748	2Ω2 1206 5% FUSE
3216⚠	4822 117 11152	4Ω7 5%
3217	4822 117 10833	10k 1% 0.1W
3218	4822 051 10102	1k 2% 0.25W
3219	4822 117 13509	4X47Ω 5% 1206 NETWORK
3220	4822 051 30103	10k 5% 0.062W
3225⚠	4822 117 11748	2Ω2 1206 5% FUSE
3226	4822 117 10833	10k 1% 0.1W
3229⚠	4822 117 11748	2Ω2 1206 5% FUSE
3233	4822 117 10354	22k 1% 0.1W
3235	4822 051 30008	0Ω jumper
3236	4822 051 20008	0Ω jumper . (0805)
3237	4822 051 20008	0Ω jumper . (0805)
3241	4822 117 10354	22k 1% 0.1W
3242	4822 117 10833	10k 1% 0.1W
3243	4822 117 10834	47k 1% 0.1W
3245	4822 117 10834	47k 1% 0.1W

3248	4822 117 10354	22k 1% 0.1W
3254	4822 117 10354	22k 1% 0.1W
3256	4822 117 10833	10k 1% 0.1W
3258	4822 117 10834	47k 1% 0.1W
3260	4822 117 10834	47k 1% 0.1W
3263⚠	4822 117 11748	2Ω2 1206 5% FUSE
3265	4822 117 10837	100k 1% 0.1W
3266	4822 051 10102	1k 2% 0.25W
3267	4822 051 30102	1k 5% 0.062W
3268	4822 117 10837	100k 1% 0.1W
3269	4822 051 20101	100Ω 5% 0.1W
3270	4822 117 10833	10k 1% 0.1W
3271	4822 051 20101	100Ω 5% 0.1W
3273	4822 051 20101	100Ω 5% 0.1W
3274	4822 051 20101	100Ω 5% 0.1W
3275	4822 051 20101	100Ω 5% 0.1W
3276	4822 051 20101	100Ω 5% 0.1W
3277	4822 051 20101	100Ω 5% 0.1W
3278	4822 051 20008	0Ω jumper . (0805)
3279⚠	4822 117 11151	1Ω 5%
3280	4822 117 10833	10k 1% 0.1W
3282	4822 051 30103	10k 5% 0.062W
3283	4822 117 10833	10k 1% 0.1W
3284	4822 051 30008	0Ω jumper
3285	4822 051 30472	4k7 5% 0.062W
3286	4822 051 30154	150k 5% 0.062W
3287	4822 117 12925	47k 1% 0.063W 0603
3300	4822 051 30103	10k 5% 0.062W
3302	4822 051 30103	10k 5% 0.062W
3303	4822 051 30103	10k 5% 0.062W
3304	4822 051 30103	10k 5% 0.062W
3305	4822 051 30103	10k 5% 0.062W
3306	4822 051 30103	10k 5% 0.062W
3307	4822 051 30103	10k 5% 0.062W
3308⚠	4822 117 11748	2Ω2 1206 5% FUSE
3310	4822 051 10102	1k 2% 0.25W
3312	4822 051 10102	1k 2% 0.25W
3313	4822 117 10833	10k 1% 0.1W
3314	4822 117 10833	10k 1% 0.1W
3318	4822 051 20101	100Ω 5% 0.1W
3319	4822 051 20101	100Ω 5% 0.1W
3320	4822 051 20101	100Ω 5% 0.1W
3328	4822 051 20105	1M 5% 0.1W
3331	4822 051 20101	100Ω 5% 0.1W
3333	4822 051 30101	100Ω 5% 0.062W
3335	4822 051 30103	10k 5% 0.062W
3337	4822 051 30103	10k 5% 0.062W
3339	4822 051 30103	10k 5% 0.062W
3342	4822 117 10833	10k 1% 0.1W
3350	4822 051 10102	1k 2% 0.25W
3352	4822 051 20008	0Ω jumper . (0805)
3353	4822 051 20101	100Ω 5% 0.1W
3354	4822 051 20101	100Ω 5% 0.1W
3355	4822 051 20101	100Ω 5% 0.1W
3356	4822 051 20101	100Ω 5% 0.1W
3357	4822 051 20008	0Ω jumper . (0805)
3359	4822 051 20008	0Ω jumper . (0805)
3360	4822 051 20008	0Ω jumper . (0805)
3361	4822 051 20101	100Ω 5% 0.1W

6000	4822 130 11382	BYG50D
6001	4822 130 11382	BYG50D
6002	4822 130 11382	BYG50D
6003	4822 130 83757	BAS216

7000	4822 209 17285	SAA7324H
7005	9337 143 50653	74HCT08
7006	5322 130 42718	BFS20
7007	4822 130 60373	BC856B
7008	5322 130 42718	BFS20
7009	5322 130 42718	BFS20
7010	4822 130 60511	BC847B
7011	5322 130 42718	BFS20
7019	4822 130 60373	BC856B
7020	4822 209 16877	BA6856FP
7021	4822 209 32852	TDA7073A/N2
7022	4822 209 32852	TDA7073A/N2
7023	5322 130 42718	BFS20
7025	9337 153 10118	IC SM 74HCT4052D (PHSE) R
7120	4822 209 30095	LM833D
7130	4822 130 60511	BC847B
7131	4822 130 60373	BC856B
7132	4822 130 60511	BC847B
7203	4822 130 60511	BC847B
7204	4822 209 17398	LD1117DT33
7301	4822 130 60511	BC847B
7309	4822 209 17237	UDA1320ATS
7310	4822 130 60511	BC847B